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**DISASTER WORKERS: TRAUMA AND SOCIAL SUPPORT**

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**92-19367**

**92 7 21 042**

1 May 92

Final

Disaster Workers: Trauma and Social Support

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An estimated 7% of the U.S. population is exposed to traumas/disasters each year. In the military, traumatic events caused by training, war, and combat, are an expected part of life. Understanding individual, unit and community responses to traumas/disasters is critical to developing better ways to aid the rapid recovery of the exposed individuals/groups. This volume reviews the initial data from two 1989 disasters: the Sioux City, Iowa crash of United Flight 232 and the explosion in the USS Iowa gun turret. These studies focus on the short- and long-term reactions of the rescue workers and afford the opportunity to compare and contrast these disasters and their impact on rescue workers. Several features of the trauma affect people's responses: death of a loved one, threat to one's own life, warning vs. unexpected, displacement from one's home, exposure to the grotesque and the duration of exposure to the trauma. The Flight 232 crash and the USS Iowa explosion provide the opportunity to learn more about these factors. Both tragedies share many features but also differ in ways that may further elucidate factors influencing the impact of a disaster on a community.

Stress, Post-traumatic Stress Disorder, Combat Psychiatry,  
Disaster, Disaster Workers, Military Psychiatry

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## DISASTER WORKERS: TRAUMA AND SOCIAL SUPPORT

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## ACKNOWLEDGEMENTS

In order to understand the effects of trauma and disaster on our community, the support of a wide array of people and institutions is required. Most important are those individuals who have contributed their time and efforts to participate in these studies by describing their experience and allowing us a window on their lives during a trying time. We have the greatest respect and admiration for our study participants. Their willingness to share a part of a difficult life event makes this work possible.

A number of individuals, through their personal support and efforts, have fostered the development of these studies and recognized their importance to both the military and civilian communities. In particular, we wish to thank Drs. Monte Miller, James Zimble, Jay P. Sanford, Harry C. Holloway, M. Richard Fragala, David H. Marlowe, Susan Larsen, John M. Mateczun, Michael Robinson and Col Dennis Swanstrom, ANG, and Col Brian C. Bade, ANG. Their vision of the importance of understanding the effects of trauma and disaster and their personal and administrative support have sustained our work.

We hope that through increasing our understanding of the effects of traumas and disasters, we will be better able to provide aid to those in our community exposed to such tragedies.

## EXECUTIVE SUMMARY

Trauma and disaster are a part of everyday life. It has been estimated that 7% of the U.S. population are exposed to traumas and disasters each year. In the military, traumatic events caused by training, as well as war and combat, are an expected part of life. Understanding individual, unit and community responses to traumas and disasters is critical to our developing better ways to aid the rapid recovery of individuals and groups exposed to the traumatic events of war.

This volume reviews the initial data collected from two disasters which occurred in 1989: the crash of United Flight 232 near Sioux City, Iowa and the explosion in the gun turret aboard the USS Iowa. The focus of these studies is on the short- and long-term reactions of workers who helped in the aftermath of these calamities. The crash and the explosion afford the opportunity to compare and contrast these disasters and their impact on rescue workers. Several features of the trauma are known to affect people's responses: death of a loved one, threat to one's own life, warning vs. unexpected, displacement from one's home, exposure to the grotesque and the duration of exposure to the trauma. The crash of Flight 232 and the explosion aboard the USS Iowa provide the opportunity to learn more about these factors. Both tragedies share many features in common: exposure to death and the grotesque, fire, etc. However, they also differ in ways that may further elucidate factors influencing the impact of a disaster on a community.

The first major way in which they differ is that Flight 232 crashed in a community in which only a small number of townspeople knew any of the passengers, i.e. the tragedy struck a group of people external to the community. Moreover, the crash victims were from communities throughout the United States. This is in marked contrast to the USS Iowa explosion in which over 50% of the respondents who were aboard the ship at the time of the explosion lost a friend, and over 75% lost someone they knew. Because over 50% of the crewmembers also worked directly with the dead they were exposed to the added stress that the remains might be those of a friend. Also, while workers in both disasters were at some personal risk, this was much higher for USS Iowa crewmembers who had to battle fires which potentially threatened the integrity of their vessel. USS Iowa crewmembers also differed from the rescue workers at Sioux City in that when the explosion occurred the ship was north of Puerto Rico, far away from her home port of Norfolk. They were unable to "get away" from the horror or to be with family members and other supports in the Norfolk community.

The rescue worker populations also differed in the ramifications the crash had for their livelihoods. While a minority of the Sioux Falls rescue workers had to fly in airplanes out of vocational necessity, the rescue workers on the USS Iowa were sailors who would ultimately have to sail again, many on the same vessel, now the repository of tragic memories. The Sioux Falls responders had recently practiced a mass casualty at the very site of the Flight 232 crash. It is also interesting to examine the feelings regarding the cause of the disasters and the allocation of blame. Finally, and perhaps most importantly it is important to notice the resiliency both groups have demonstrated.



The spouses and significant others of the Sioux City workers were readily available for support. In this study they were asked to describe their personal experiences and their perceptions of their spouses' reactions. Because the USS Iowa was away from port, crew members did not have immediate access to family members. Notably, though, support from their community was high and was valued by them.

These data provide important information about ways in which disasters affect people and can provide guidance for commanders and community leaders. These disasters indicate:

- \* Exposure to traumatic events, in particular, death and dismembered bodies, is extremely stressful.
- \* Individual and unit recovery is expected and occurs over a period of months, not hours or days.
- \* Time off should be given to those who are involved in disaster work.
- \* The expression of feelings at unexpected times and in unexpected places is a natural part of recovery following a disaster.
- \* Individuals should be encouraged to talk about their experiences and commanders should provide a climate in which discussion is possible.
- \* Informing disaster workers about the events of the disaster and involving spouses/significant others in the recovery process increases the strength of the recovery environment and is an important aspect of mobilizing the community to support both disaster victims and support givers.
- \* Support providers require support. They experience a great deal of distress at being unable to fulfill all of the demands present in the chaos of a disaster.
- \* Recognition for disaster work is very important to the integration of the experience into the normal pattern of life.
- \* Sensitive leadership is critical to individual and unit recovery.
- \* Management of the media is a major stressor on commanders.
- \* Search for the cause of a disaster can both aid and interfere with recovery.
- \* The role of "hero" can be extremely stressful.
- \* Psychiatric consultation, using a prevention model, can be of value in preventing acute and delayed morbidity after the trauma of a disaster.

## **SIoux CITY AIR CRASH**

## SUMMARY

On July 19, 1989, United Airlines Flight 232 crashed into the cornfields of Sioux City, Iowa. On the ground waiting were the Sioux City rescue teams and Air National Guard (ANG) units. Hundreds of doctors, nurses and volunteers were standing by at the hospitals. As the aircraft broke apart and burst into flames, rescue workers felt certain no one had survived. Miraculously, 184 passengers lived through the crash, attributed to the pilot's skill in making an emergency landing. Forty survivors were critically injured but were quickly evacuated to hospitals after prompt treatment by the ANG and medical teams. The teams were well prepared having trained together for such a situation and having ample warning of the crash. One hundred and twelve passengers on Flight 232 died. Rescue teams took on the task of body recovery and a temporary morgue was set up in a nearby hangar to identify and process the remains.

On the day of the disaster, the USAF Surgeon General asked the Uniformed Services University of the Health Sciences (USUHS) to assemble a team for deployment to the crash site. This team included members from USUHS, Walter Reed Army Institute of Research and Offutt AFB. It was sent to provide support to the ANG and other rescue workers who had responded to the crash and to better understand how such disasters effect the military community. A month later, a survey of the ANG community began and included three groups: Those ANG members and firefighters who helped directly with rescue and clean-up (disaster workers); those who belonged to the ANG or firefighter units but who were not present on the day of the crash (non-disaster workers); and the spouses/significant others of both disaster workers and non-disaster workers. In addition, surveys were distributed to a control sample of ANG members and their spouses/significant others located in Sioux Falls, SD, at some distance from the crash site.

Of the 1030 surveys distributed to the Sioux City community, 504 people agreed to join the study. Of these, 207 were disaster workers and 101 were non-disaster workers. In addition 196 spouses/significant others of these disaster workers and non-disaster workers also volunteered for the study. One hundred percent (100%) of these volunteers completed Time 1 surveys. Of the 1080 surveys distributed to the Sioux Falls community, 421 Sioux Falls ANG members as well as 254 of their spouses/significant others volunteered for the study. All of these non-disaster controls and spouses/significant others completed Time 1 questionnaires. Surveys were completed by all groups approximately two months after the crash. This is the initial report on the first phase of an 18 month study of this group and their responses to the United Airline Flight 232 crash.

### Sioux City Air Crash Workers

The modal respondent in the sample of 207 air crash disaster workers who completed the survey was a White, married, well-educated male with a rank of E4 - E7 in the ANG. For the vast majority (90.8%), this was their first experience with a disaster. Predictably, the disaster worker group had the greatest exposure to the crash site, morgue and victims when compared with the other groups in the study. Some of the disaster workers (19%) also had contact with the families of survivors who arrived

in Sioux City following the crash. Many of the disaster workers' written comments reflect the overwhelming intensity of their experience as they worked closely with the dead and dying. Many respondents included lengthy additional comments describing in graphic detail their work at the crash site or in the morgue. Ninety two percent (92%) report two months later that they still think about crash. Many (69%) experienced moderate to a great deal of stress following the disaster, and 22% felt very much that "it could have been me" when thinking about the victims.

Twenty percent (20%) reported problems while assisting at the crash site ranging from practical issues (a truck that failed to work; not having enough splints for the care of casualties), to personal concerns ("I didn't last long in the morgue"; "Finding some body parts near the fuselage was difficult for me"). They also reported experiencing difficult choices concerning the triage of victims and maintaining priorities of completing their task (e.g. putting out the fires) versus helping the seriously injured victims. Some of their decisions resulted in feelings of guilt about not doing enough, not staying longer to help, not working with the bodies in the morgue, not accounting for all the victims, and not bringing the dead off the airfield that first night. These themes continued to haunt them as they recalled the crash two months later.

The disaster workers' memories of the disaster are often triggered by specific stimuli, such as seeing an airplane fly by or hearing about other air crashes. However, many disturbing memories are reported by respondents to occur spontaneously - "Sometimes I see the dead people"; "I can sometimes hear people calling for help". Some disaster workers report a continuing review of their actions on the day of the crash, as they relive their experiences and wonder if they could have done more. Although feelings of helplessness, guilt, anger and sorrow are frequently described, so are pride in their unit and community, and increased self-knowledge and self-assurance. Many describe gaining something positive from their work at the crash site and morgue, typically reflecting lessons learned, reaffirmations of community and family, and increased appreciation of life. Reflecting these aspects, they note that support received from family (65%), friends (49%), and co-workers (64%) helped them cope over this time. Many (62%) also report supporting others who were upset.

#### **Sioux City Non-Disaster Workers**

Respondents who were members of the Sioux City ANG at the time of the crash, but who did not work directly with the victims or survivors, are demographically similar to the ANG worker sample in terms of age, sex, marital status, race, rank and education. Many in the non-disaster worker group (51%) also report experiencing moderate to a great deal of stress following the crash, and 78% claim they still think about the crash two months later. Although this group was more peripheral in their exposure to the crash, and their reported reactions and symptoms following the crash are fewer and rated less severe than in the disaster worker sample, they were clearly affected by the event. They report often having thoughts of the accident and its victims (38%); often having strong feelings about the crash (16%); and often talking to their spouse/significant other about the disaster (48%).

Themes in the non-disaster worker sample reflect their frustration, sorrow, anger and guilt at not participating in the crash response with their fellow unit members. Many report feeling left out, not being needed, and "standing on the outside looking in". Many expected to be called and "waited on edge". Some describe their anger when this failed to happen, and their belief that they could have helped. However, many

respondents also express pride in their unit's work and report listening to and supporting fellow ANG members more directly involved in the crash response.

### **Sioux City Disaster Worker and Non-Disaster Worker Spouses/Significant Others**

Surveys were completed by 196 Sioux City ANG spouses/significant others. Sixty-five percent (65%) of these had spouses/significant others who worked at the crash site, and 35% had non-disaster worker spouses/significant others. The modal respondent was a White, married, well-educated female. Twenty-nine percent (29%) of this sample had contact with the survivors of the crash or their families. Some respondents were nurses or helped at the centralized facility established for family members of the crash victims, some met the survivors or families in the community or through their worker spouses/significant others.

Reactions and symptoms reported by this group in the week following the crash and two months later were similar to those reported by the ANG disaster worker sample with the level of distress rated as high. Ninety percent (90%) of the spouses/significant others still think about the crash compared to 92% of the worker sample. For the spouses/significant others, memories of the crash typically are precipitated by the media or by their spouse bringing up the topic, in contrast to the disaster workers who report their memories are often spontaneous, eidetic images of victims or crash-related events. Frequently reported reactions on first hearing about the crash concerned the safety of their ANG spouse/significant other and empathy for the families of the victims. Later in the week that followed the crash, their reactions shifted to increased support for their disaster worker spouses/significant others who were upset and distressed by memories of the crash victims.

Pride in the ready, helpful response of the ANG and the community were viewed as positive outcomes from the crash experience, as were a greater appreciation of life and the mutual support and sharing noted in their families over this time. Not all outcomes were positive, however. There were some reports from spouses/significant others about reactions in the ANG disaster workers that were creating tension and stress in their families. Some descriptions include: "He's been uptight ever since"; "It caused him to drink heavily after he had quit"; "He has not been able to talk about the crash. He was very despondent"; "Not enough sleep, not eating right, and tension all the time...."

### **Sioux Falls ANG Non-Disaster Worker Control**

The ANG non-disaster worker control sample located at Sioux Falls, SD, included completed surveys for 421 members. Demographically, the Sioux Falls respondents are similar to those from the Sioux City sister unit: The modal Sioux Falls ANG respondent is a White, married, well-educated male, with a rank of E4 to E7. Once again, for the vast majority (88%) this was their first encounter with a disaster.

Twenty-six percent (26%) of the Sioux Falls ANG respondents expected to be called to assist at the crash site. When this failed to happen, their concerns shifted to their sister unit in Sioux City. Many described their intense interest in the details of responses of their counterparts who were involved with the crash. Some expressed relief that it had not happened in their community, wondering how they would have performed. Some attempted to detach from the event and its effects by noting its

distance from Sioux Falls -- "I felt far enough away.."; "I wasn't actually there to feel the impact...". Yet 40% of the Sioux Falls ANG respondents felt moderately to very much that "it could have been me" when thinking about the victims of the crash, and some expressed anger at the media for replaying footage of the crash: "It brings it closer to home. Makes it real -- makes it difficult to detach. It could have been our community."

Fifty-eight percent (58%) of the Sioux Falls ANG sample report that they still think about the disaster, compared with 92% of the Sioux City disaster worker respondents. The Sioux Falls sample reports fewer reactions and symptoms in the week following the crash, with lower ratings of severity than was found in the Sioux City sample. Their assessment of positive outcomes from the disaster focus on the effectiveness of their sister unit's response to the crash and how this might contribute to lessons learned, providing valuable information for additional training and updating of their own emergency procedures since, "it could happen here "

### **Sioux Falls Spouse/Significant Other Control**

Demographically similar to those at Sioux City, the modal spouse/significant other respondent at Sioux Falls was a White, married well-educated female. However, their reported reactions to and experiences of the crash were more similar in content and magnitude to the Sioux Falls ANG non-disaster worker control group than to the more directly exposed spouses/significant others located at Sioux City. A puzzling finding, difficult to interpret without baseline, pre-crash data for this group, is their reporting of a greater number of symptoms rated in the moderate to extreme range by a higher percentage of the sample two months after the crash, than was reported by any other group of respondents -- including the Sioux City disaster workers and their spouses/significant others.

Many reactions described by the spouses/significant others located in Sioux Falls following news of the crash focused on concerns for their own family members and friends who might have been victims, and on those families who had in fact suffered major losses. Some respondents describe their own efforts to provide support to others who were upset by the crash, reassuring potential travelers and debriefing co-workers who went to Sioux City to help. Some reported that their faith in the Sioux City community response and not knowing anyone who was a victim were important in helping them deal with the stress of the disaster. Similar to the responses of the Sioux Falls ANG members, they express appreciation for the heroic efforts of the Sioux City ANG, as well as concern about such an event happening in their own community or to them personally. They wonder: "Would we do as well?"

## INTRODUCTION

On July 19, 1989 at 3:57 pm, the city of Sioux City, Iowa was the site of one of the worst airline crashes in U.S. history. One hundred twelve (112) people died when a DC-10 made an unsuccessful emergency landing at Sioux City's Midway Airport. There were one hundred eighty-four (184) survivors among the passengers and crew. The high percentage of survivors was attributed to the pilot's skill, the prepared emergency rescue squads, and "luck".

It began as a routine trip from Denver to Chicago for United Airlines flight 232, but then pilot Alfred Haynes lost the number two engine over Alta, Iowa, about 60 miles from Sioux City (the engine would later be recovered in a cornfield there). Normally, any of the DC-10's three engines can power the aircraft alone, but in this case all of the plane's hydraulic power was lost, leaving the pilot with no control of its rudders, elevators, wing flaps or ailerons. This left no way to steer or control the aircraft.

DC-10's are equipped with three hydraulic systems, each powered by one engine and each capable of controlling the plane alone in an emergency. The exploding fan blade of engine two had cut all three lines where they converged in the tail. The cause of the explosion was later traced to a crack in a fan blade. This is the third DC-10 crash in 15 years attributed to hydraulic pressure failure. The worst single plane crash in history occurred in 1974 when a Turkish DC-10 lost a door on take-off from Paris, causing loss of pressure and ultimately a crash in which 346 people lost their lives.

Captain Haynes radioed the Minneapolis/St Paul control tower that he had an emergency and needed to land at the nearest airport. He was directed to Sioux City, Iowa, thirty miles away. Meanwhile, Haynes, his crew, and an off-duty pilot who was on board tried to steer the airplane. They found that by alternately thrusting the two remaining engines they could manage wide right turns, and thus slowly spiral towards the Sioux City runway.

Sioux City rescue teams were alerted to the impending emergency landing. Two years prior to July 1989 these teams had gone through a drill that simulated a large airline crash with 150 survivors. Given 30 minutes notice, Sioux City assembled 40 ambulances as well as fire trucks. The National Guard units located at the airport were a major part of the rescue plan. In addition, 100 doctors and over 300 nurses and volunteers were standing by at two nearby hospitals.

As Captain Haynes guided the plane towards the runway, it looked at first as if he would be able to make a safe emergency landing. However, as the plane neared the ground, the right wing hit the ground, sending the aircraft cartwheeling across the runway and into a cornfield. The aircraft broke into several large and hundreds of small sections, many of which burst into flames. When the crash was over, only three sections of the plane were recognizable: the nose and flight deck, rows 9 to 19 (the sections that were once attached to the wings), and the tail.

As the rescue workers watched the crash they reported feeling certain that no one had survived. Yet as the firemen reached the scene they saw stunned passengers and crew members walking away from the wreckage, some of whom were barely bruised. Over half of the passengers of flight 232 survived the 10th most deadly airplane crash in US history.

## *Disaster Workers: Trauma and Social Support*

Three factors seem to have contributed to the high survival rate. The first was the pilot's and crew's actions. Faced with the emergency, they managed to control the plane using educated guesses as to what would work best in getting safely to the ground.

The second factor was the skilled work of the Sioux City Air National Guard, the medical teams, and other volunteers. Within 45 minutes following the crash, all of the approximately 40 critically injured patients were en route to area hospitals. All survivors were evacuated from the crash site within 3 1/2 hours of impact. Only 11 survivors died in or on the way to the hospital, (a twelfth died a month later of injuries sustained in the crash). The prompt emergency medical treatment undeniably spared lives.

The third major factor was the good training and preparedness of the response teams. The rescue teams of Sioux City had run through a mock situation much like the crash of flight 232, so they were extraordinarily prepared. In addition, they used the advance warning efficiently, placing resources where they would be the most helpful once the plane hit the ground. The plane crashed just seven miles from Marion Trauma Center, and the crash occurred at a time of day when the two area hospitals were changing shifts, thus a maximum amount of personnel were on site when the emergency call came in.

Also contributing to the high survival rate was the fact that the plane's landing gear lowered by gravity, thereby partially supporting part of the plane as it hit the ground. Most survivors were seated in the section of the plane above the landing gear. In addition, off-duty pilot Dennis Fitch helped the pilot and copilot steer in the landing. New fire-resistant upholstery on the seats of the plane reduced the amount of fire.

In the end, most people in America called the airline tragedy a miracle. President Bush honored Captain Haynes and his workers as well as five air traffic controllers from the Sioux City towers. The people of Sioux City took on the task of body recovery and wreckage clean-up. A temporary morgue was set up in an airport hangar. Teams of psychiatrists and psychologists were on hand to debrief those dealing with the stressful job of recovering bodies and wreckage.

A few days after the plane crash, the Uniformed Services University of the Health Sciences (USUHS) trauma research team visited the crash site and morgue at the Sioux City Airport and debriefed firefighters and Air National Guard members. A month later, the USUHS trauma team initiated a survey study of the Sioux City Air National Guard community which responded to the air crash, as well as a control study of a Sioux Falls, South Dakota Air National Guard unit.

Approximately 1030 surveys were distributed to Sioux City Air Guard members and fire fighters. The respondents comprised three groups: those who helped with the rescue and clean up (disaster workers), those who belonged to the National Guard and fire fighting units which responded to the scene but who were not actually present on the day of the crash (non-disaster workers), and the spouses and significant others of both the disaster workers and non-disaster workers. A total of 504 agreed to be part of the study, and 100% completed Time 1 surveys. Two hundred seven (207) respondents were disaster workers, 101 non-disaster workers, and 196 spouse/significant others.



Approximately 1080 surveys were distributed to the control group in the Sioux Falls, South Dakota Air National Guard. A total of 421 of these Guard members agreed to be part of the study. In addition 254 spouses/significant others of these ANG members volunteered for the study. One hundred percent (100%) of these volunteers completed Time 1 surveys and became part of the Non-Disaster Worker/Control or Spouse/Significant Other/Control group.

**SIOUX CITY AIR CRASH:**  
**SIOUX CITY AIR NATIONAL GUARD DISASTER WORKERS**

## DISASTER WORKERS

### *Summary of Response Frequencies*

Surveys were completed by 207 disaster workers. Ninety-one percent (91%) of the surveys were completed between 1 September and 17 September 1989, approximately 2 months after the Sioux City Air Crash occurred. The respondents were 88.4% male, 98% white, and 81.5% enlisted, with the majority having a rank of E4-E7. The median age of the respondents was 38, with a range from 18 to 58; 60.7% were married. Occupations with the National Guard were varied, with most reporting work in avionic systems, aircraft systems maintenance, and fire protection. Outside of the Guard, most worked in administration or as students. The education level was very high, 98.5% having graduated from high school and 74.6% reporting at least some college education. For 90.8%, this was their first encounter with a disaster.

### **The Experience of the Disaster**

- \* Forty-six percent (46%) worked with survivors of the crash, and 32% of these worked with children who survived
- \* Sixty percent (60%) worked with the dead directly, 48% of these with children who died.
- \* Twenty percent (20%) worked as firefighters. Others worked assisting survivors, recovering bodies or personal effects, and security and administrative support, among other tasks.
- \* Twenty-two percent (22%) of workers reported being in physical danger while working.
- \* Nineteen percent (19%) reported having contact with families of survivors.
- \* Twenty percent (20%) encountered problems while assisting at the crash site.
- \* Twenty-six percent (26%) made difficult decisions while working.
- \* Eighteen percent (18%) felt "very tired" the day after the crash, although 50% of these respondents returned to "normal pace" within 3-4 days.
- \* Sixty-nine percent (69%) experienced "moderate" to "a great deal" of stress following the disaster.
- \* Twenty-two percent (22%) felt "very much" that "it could have been me" when thinking about the victims of the air crash.
- \* Sixty-two percent (62%) supported others who were upset.
- \* Sixty-five percent (65%) reported that their family was "very supportive" following the air crash. Forty-nine percent (49%) said their friends were "very supportive" and 65% said their co-workers were "very supportive".
- \* Ninety-two percent (92%) still thought about the disaster.

## *Disaster Workers: Trauma and Social Support*

- \* Fifty-eight percent (58%) talked with their spouse about the air crash during the week following its occurrence. Sixty-four percent (64%) talked about it with their co-workers during the same time period.
- \* Eighty-five percent (85%) feel that something positive had come from the air crash.

Respondents were asked to think back to the week of the disaster, and reported that the following reactions occurred "often":

- \* Had thoughts of the accident and its victims. (54%)
- \* Talked with their spouse/significant other about the crash. (49%)
- \* Spent a great deal of time at work. (42%)
- \* Had pictures of the disaster pop into their minds. (35%)
- \* Spouse/significant other talked with them about the crash. (33%)
- \* Felt very tired. (30%)
- \* Spent extra time with their spouses and children. (22%)
- \* Spent time with peers and friends. (22%)
- \* Thought about the crash when they didn't mean to. (22%)
- \* Avoided letting themselves get upset about when they thought about or were reminded of the accident. (22%)
- \* Had trouble sleeping. (18%)
- \* Reminders brought back feelings about the accident. (17%)
- \* Other things kept made them think about the disaster. (17%)

A wide range of symptoms was reported after the disaster. We report those symptoms that were rated "moderately", "quite a bit", or "extremely" by at least 20% of the respondents. The symptoms and the percentage of the population reporting this level of distress are listed below:

- \* Worrying too much about things. (37%)
- \* Feeling easily annoyed or irritated. (33%)
- \* Others not giving you proper credit for your achievements. (27%)
- \* Worried about sloppiness or carelessness. (26%)
- \* Feeling critical of others. (25%)

- \* Sleep that is restless or disturbed. (24%)
- \* Awakening in the early morning. (22%)
- \* Feeling low in energy or slowed down. (22%)
- \* Feeling tense or keyed up. (20%)
- \* Feeling less upset or angry about things which once caused you to be upset and angry. (20%)

### *Summary of Written Comments*

Respondents were asked several open ended questions related to how they experienced the disaster and the days following it. Below is a summary of their written responses.

#### **HAVE YOU EVER PARTICIPATED IN A MASS CASUALTY/DISASTER EVENT BEFORE?**

"Yes, I served in Viet Nam."

"I was in the US Marine Corps. There was a carrier crash off the end of the runway and I helped extinguish the fire."

"In 1976 I was in Italy with the 185th. We put up tents and helped with the earthquake victims in Northern Italy."

"As a firefighter/ Emergency Medical Technition (EMT) I have responded to multiple victim auto accidents, but nothing of the magnitude of flight 232."

"I participated in the following casualty/disaster events: Good Friday earthquake, Anchorage, Alaska - US Postal Service; Hurricane Betsy, NOLA - medic in US Coast Guard; Cuban refugees at sea - US Coast Guard medic; on team in USNR Glenview, IL with civilian air emergency landing."

"I was in Vietnam in 1970. A typhoon caused flooding, so we helped remove drowning victims from river."

"As a firefighter, I extracted the bodies of 5 children who died in a house fire in 1982 and 6 children who died in a house fire in 1983."

"In 1969 I was stationed at Keesler AFB Mississippi. I worked at the medical center at Keesler. After Hurricane Camille I helped locate and bag bodies."

#### **HOW DID YOU FIRST LEARN OF THE DC-10 CRASH? WHAT WAS YOUR REACTION?**

"I heard about the crash on the phone; I was stunned."

"I heard the pilot of the DC-10 call in on the tower frequency..."

"I first learned of the DC-10 crash on the volunteer Fire Dept pager. I was shocked."

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"At first they looked like they had made it okay. As I watched what happened, I was stunned."

"I was in a fire truck when the actual crash happened."

"I was afraid the plane would land on my house."

"I was working at the Guard. We heard through word of mouth that a DC-10 was in trouble and would be emergency landing. I went outside and watched the crash. I reacted with shock and disbelief."

"I thought that this would probably be a routine landing, but because DC-10's usually don't land here I wanted to watch the landing. When the aircraft was sighted coming from the East instead of South, I knew something was very wrong."

"I was in the command vehicle on the runway which the DC-10 crashed on. My first reaction was to radio information to the command post, then order crash equipment to the main part of burning aircraft."

"I heard transmissions about flight 232 on the radio prior to landing my A-7D at Sioux Gateway Airport. After shutting down my aircraft on the ANG ramp, I climbed out, and was walking up the ramp when I heard a thump. I looked up and saw a big black cloud and flame at the north end of the airport."

"At that time I lived in Sioux City. I was home working and heard the T.V. reports about the crash. They called for all people with crash and rescue training to come down. I jumped in the car and went to the fire house."

"At that time, I was listening to the radio and police scanner. Another officer was asking dispatch if they needed help. The reply was positive. I then put on a uniform, as I was getting ready for work, and went to the scene."

"I learned of the crash on a TV at the local mall. I felt that I would like to help, so I immediately called work."

"I heard about the crash on a radio broadcast while on vacation. I was shocked and stunned."

"St. Luke's hospital was notified immediately. At first I did not realize the extent of the tragedy. I was initially worried more about my wife who was an eye witness to the crash."

**DESCRIBE YOUR ACTIVITIES DURING THE FIRST HOURS AFTER THE CRASH. WHAT WERE YOU THINKING AND FEELING AT THAT TIME?**

"After the crash, I was busy and I felt numb."

"I felt a great sadness for the tragic loss of human life and relief for survivors."

"I was so shocked, as if it wasn't real. I thought I was in a movie."

"I was thinking of trying to locate anyone to give medical attention."

"I watched TV and waited to be called for duty at the crash site."

"I wasn't called right away, so I continued normal activities until I was called about 45 minutes after the crash."

"I walked around for awhile just looking at the victims. I felt sorry for those who died."

"After the crash I walked around the corn and bean fields helping to locate bodies. I felt sorrowful."

"The crash sight looked like a battlefield, the dead were everywhere."

"I walked the fields looking for survivors. I was hoping there were survivors and at the same time I was afraid of the condition they would be in."

"After the crash I helped extinguish the main fuselage. I also helped rescue people from the aircraft. I just kept moving and helping all the people I could."

"I thought about how glad I was that we had drills that helped train us in what to do."

"I got there in time to help fight the fire in the main body of the aircraft, I didn't take time to think, I just did what I was told and tried to knock down the fire."

"All I could think of was, 'My God, how could this happen to those helpless people?'"

"I was worried that I would not be able to perform my professional duties to the level that I knew was required. I don't usually worry about that. I continued to feel a loss for the people who suffered but also for those who I knew were working at the site."

"I went from one body to another searching for survivors. I found a boy who was badly hurt but able to talk. I told him to be thankful he was alive. I also told him that he wasn't to give up on God because God didn't give up on him. From then on I had strength for anything."

"I was the first physician on the scene. I conducted triage in my area and supervised the loading of casualties into ambulances. I supervised extraction of flight crew from cockpit wreckage. When I first saw the black cloud from the crash I initially thought I wouldn't be needed. As we approached the crash, I was very apprehensive, and wished I had been elsewhere. Once involved in triage, I felt excited, but confident and full of energy."

"I drove through the crash scene very very slowly, driving around dead persons, pieces of aircraft, walking wounded, and people who were not even hurt. I said to myself it is a miracle that anyone could survive. I helped fight the main fire until it was brought under control."

"I drove a forklift to the site and, with assistance of rescue crews, I operated the forklift to lift twisted wreckage to free 3 people. Later I learned that they were the pilots."

"I arrived at the site approximately 15 minutes after the crash. I counseled the injured, including those still trapped in the plane, other survivors, and rescue workers."

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"I responded automatically. I knew injured people needed to be moved. The dead were everywhere, but I knew nothing could be done for them. Those who were alive and needed help were my first priority."

"I concentrated on attending to the injured. I then helped search for the missing. I also assisted in counting bodies. During this time I went from UTA status to working with Sioux City Police Dept where I am employed as a patrolman full time."

"We (about 50 Guardsmen) stood in shock for about 2 minutes and heard an all-call for all blue vehicles (military) to get down to the crash site. We ran to a truck and drove to the end of the runway. At first, I felt we were going for nothing because I didn't think anyone could survive such a crash."

"I helped survivors get to medical help. I've had First Aid training which was helpful with most of the injured parties I worked with. I became extremely hardened as to the dead bodies in the area."

"I assisted carrying survivors to the staging area. I was not thinking of anything in particular I was just trying to save lives if I could."

"I was involved with establishing on site and outer perimeter security. I also helped take body counts on the runways and searching the corn and bean fields for survivors and bodies. I kept thinking, 'One hell of a lot of people died here today. How did anyone survive?'."

"I ran into my office and called my mother. I told her what had happened. I started to cry I wanted to go out and help yet I knew I had to stay."

"I heard on TV that blood donors were needed, so I went to the blood bank."

"I answered phones at the armory. I couldn't believe how many people were calling from other states."

"A large group of us went out and got drunk. I stayed up all night going through a lifetime of emotions with my girlfriend whom I kept on the phone for several hours. I washed my bloody flight suit many times."

"I wished I was back from my vacation in Portland, Oregon so I could have helped."

"I was not involved in the initial activities."

**BRIEFLY DESCRIBE YOUR FIRST RESPONSES TO THE AIR CRASH, THE SURVIVORS, AND THE DEAD.**

"My first response was, 'Wow, this can't happen here in Sioux City'."

"It looked like one gigantic fatality accident."

"I was scared, concerned, and horrified."

"I had a feeling of helplessness and nausea."



"I thought, 'How many dead are there?'"

"After the crash I didn't see how anyone survived."

"I was on the crash scene within 5 minutes. I was amazed at those unscathed."

"It was something I don't ever want to see again in this life time."

"I was shocked but did what I was always trained to be prepared for."

"I went up and felt pulses. If they were dead, I moved on to someone else."

"The dead looked like mannequins."

"I was feeling *nothing*."

"My first response was, 'Where do I start?'. I had a feeling of helplessness. I still find myself saying that these things aren't supposed to happen here."

"My first response was to help recover the bodies. I had no contact with survivors."

"I wanted to cry when I saw a person die in one of the seats, but we were busy."

"My first response was to look at the dead. They looked unreal. I could not find any survivors."

"I can't remember what I was feeling when I first arrived. We grabbed a stretcher and ran over to the bodies, took their pulse, and put them on the stretcher if breathing. I didn't really look very long at the dead ones."

"I was hurt inside for all those people I saw laying on the ground and the pieces of everything blown all over the ground."

"I felt numb and disoriented. I didn't know what to do first. It took me a few minutes (or seconds?) to get into action."

"I cried, it was such a shock. I did not know if I could help at the crash site, but I was going to try. Somehow I managed to be composed enough to try and help survivors, and not concentrate on the dead."

"As far as the deaths that occurred, I wondered if one of the dead were a family member of mine."

"The first survivor I saw was a child crying loudly for his mother to wake up."

"My first reaction was to see how I could help the injured. The dead were gone, so I directed my efforts to the injured."

"When I was fighting the fire, up on the top of the plane, I could see many bodies burning. Coming to the fire late as I did, I didn't get to see any survivors, just bodies. It made me feel like I hadn't done much good."

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"I looked down the runway and you could see people still strapped in their seats. Some were walking around in a daze."

"On arriving at the scene, I found myself within a very short distance from one of the flight attendants. I leaned out the window and told her, 'Hang on honey, someone will be along shortly, I promise.' This seemed to help."

"I now know a little better what Christ meant when He said let the dead bury the dead. We could not help the dead but we sure could help the living."

"The van took us to the crash site and as we approached the area there were many, many people with such massive injuries. People had their clothing ripped away and some had parts of their bodies missing. All this seemed so massive that I was stunned."

"My first response was shock that this *did* happen at our base. I felt amazement and pride in the courage of the survivors and especially the flight crew. I have learned through experience to disassociate myself from the dead bodies. I always think and feel bad for the family of the dead, they are the ones who are suffering at this time."

"I thought to myself, Lord, help me do the best job I can to help these people."

"I had a feeling of being needed. As we drove the ambulance to the site, I became slightly angry at all the sightseers blocking the rescuers' way. Arriving at the site reminded me of a movie. The rotor sounds from the rescue helicopters drowned out the other noises. I performed first aid on many victims to stop the bleeding, I had to be told to stop on the ones that had died. It was hard to tell."

"My initial *thoughts* were that the cockpit crew and most passengers were dead. It was a fairly sobering sight to watch the priests and chaplains going around giving last rites for the dead. Most of the dead were already tagged and covered by the time I arrived at the crash site."

"I saw a woman who was dead. I was told not to look the dead in the eyes. I did and saw dirt specs in her eyes. I wanted to close them but I continued to help the ones that were alive."

"I arrived at work Thursday morning and could see a pall had settled in the building. I talked to 3 of the people who had been at the crash site administering aid and could see the effect it had on their movements, talk, and thinking. Then I was asked if I would help tag and bag. After answering yes, the detached feeling left and I could feel the fear of the unknown enter me. I was afraid of how I would act or how I would appear in the presence of disfigured or burnt bodies. I was afraid that I couldn't uphold my tough, hard image."

"I had a real bad feeling when I heard about it. I got back from my vacation in time to help load the body bags off the trucks for shipment. I'll never forget seeing those rows of bodies."

"I X-rayed many people, mainly the better ones. Their outlook was so good and optimistic. They had a good sense of humor. The little children were great. They were scared, but there was no terror throughout the hospital."

"I was answering the switchboard for the Base when I received a call from the airport. They needed a place to put the survivors so I told them to bring them to the headquarters Bldg #269. Then I told someone in the hall to get the dining area ready for the survivors."

"I called the Air Base and offered to help anyway I could."

"I didn't want to go down there, out of respect for the dead, and I didn't think there would be many survivors."

"I was not involved with the crash victims."

**WERE YOU IN PHYSICAL DANGER AT ANY TIME DURING YOUR DISASTER WORK?**

"I was involved in fighting the fire under the wing of the fuselage."

"We were the first to take hand held hose lines into and under the fire of the main superstructure of the plane."

"We were told that the fuselage would not support the weight of the wings as we were rooting through the wreckage. There were some noises that would support that assumption."

"I was up on the aircraft and I felt the craft shift as it settled. I fell into a wheel well. I was not injured, just startled."

"Parts of the plane were exploding, a little, while we were checking 2 men to see if they were alive - they were not."

"I was on the runway when the DC-10 crashed. There was lots of flying debris."

"I was in physical danger while we were searching corn fields for survivors; from smoke and fuel explosions, and also we were not sure of what might have been carried for cargo."

"You must realize anytime a fireman goes to work he can be exposed to danger."

**DID YOU WORK WITH/ASSIST ANY SURVIVORS OF THE CRASH?**

"I carried injured personnel from wreckage."

"I helped carry adults and children for help."

"I helped an adult male onto a stretcher who had back injuries. How he found the strength to get to the edge of the cornfield with the others is unreal."

"I helped release one stewardess from her chair next to the burning part of the aircraft."

"I talked with two of the male survivors and asked how they were doing and feeling. They seemed calm."

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"I discovered that one of the civilians who was helping to search the cornfield was a survivor of the crash. I sent him back to the terminal building with an escort."

"An 8 year old boy was cut from a seat and laid on the cement. Until medical personnel arrived with a litter, I kept him calm by talking to him until he was loaded in an emergency vehicle."

"I took survivors to triage."

"I talked to and comforted people who could not find their loved ones."

"I was involved in initial triage, and later with management of minimally injured at the ANG mess hall area."

"I worked at the crash site, then at the guard dining facilities where survivors who were not seriously injured were taken."

"I took X-Rays at the hospital."

"I shuttled survivors from the crash site to our chow hall where all the walking survivors were gathered. I assisted the survivors with phone calls and gave support and any other assistance I could give."

"I helped set up the relief center."

"I helped indirectly. We provided a foam blanket which allowed people to escape burning aircraft."

"I worked security at Briar Cliff College at the front desk checking survivors and relatives in and out. I talked to them in the middle of the night. I watched them walk, cry, and pray."

"I talked to our men as they brought in the bodies and with the military personnel as they worked in the morgue - offering a ministry of presence and an identification with the men."

**DID YOU WORK WITH ANY OF THE DEAD FROM THE DISASTER?**

"I recovered bodies from the fuselage."

"I worked with a burnt pregnant woman. I also removed men and children from the fuselage."

"I sprayed water on the burning bodies trapped in the fuselage."

"I helped recover bodies from the runway and from the fuselage. I also worked in the mortuary placing bodies in caskets. I then helped load caskets onto aircraft to be flown home."

"I helped with leading the hearses to the terminal building on the final day when the bodies were being sent home."

"I helped the Pathologists with the body identification process. I was the Air Guard representative in field."

"I worked in the morgue, undressing bodies for identification, and moving bodies in and out of the refrigerator trucks."

"I assisted in scrubbing bodies, wrapping the bodies, and sealing up body bags."

"I worked with the medical examiners and their team. As a victim was found, it was numbered and photographed. Then I and several others placed the victim in a body bag and took the body to a vehicle for transport to the morgue."

"I helped make dental X-rays of the victims and retrieved and returned jaws to the body bags."

"I helped process 19 victims in the mortuary before it started bothering me psychologically."

"I videotaped all facets of body and debris recovery."

"I took priest and pastor into main superstructure where there were approximately 41 dead bodies so they could give last rites to victims and pray for them."

"I lifted the blankets for the priest so he could bless the dead."

"I operated a wrecker to lift the fuselage and remove victims."

**DID YOU HAVE CONTACT WITH ANY OF THE FAMILIES OF THE SURVIVORS OR THE VICTIMS?**

"The families were thankful that the Guard was there and that all the city was so kind."

"I assured families that they would be helped as soon as possible."

"I talked with a woman and boy who lost their husband/father."

"While I was working the main gate to the Air Base, families arrived to pick up their survivors."

"I had a great deal of contact with the families at the hospital."

"I visited an 8 year old in the hospital and visited with his uncles. His Mom and Dad were victims."

"I met the father of a little boy and I met and talked several times. He then came to my house for supper."

"I helped with phone calls from family members trying to locate their loved ones."

"I had contact with the families at the hospitals and on the Air Base."

"I worked with the pilots and their sons while in recovery and when they flew home."

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"A lady who had lost her son and husband in the crash was being flown to a hospital in her own home town. Her sister who was not in the crash accompanied her. The sister approached me and several other guardsmen thanking us for what ever help we had given. None of us could find suitable words to answer."

"I had no direct contact with the families, but my mother-in-law was a friend of one of the survivors who was looking for her dead husband. I helped by trying to get confirmation on his death."

"I saw the families as they came into the mortuary, but I didn't talk to family members."

**DID YOU ENCOUNTER ANY PROBLEMS IN DOING YOUR AIR CRASH/DISASTER ASSISTANCE WORK?**

"I experienced emotional problems. I didn't really know how to act or feel."

"Each morning I did not want to go to work, but knew I had to."

"It was difficult to see so many hurt and know they were dying."

"My firetruck didn't work on site. We had to use two other firetrucks and fill them with foam by hand bucketing."

"The lack of airways and splints for initial care of casualties was a problem."

"I felt frustrated that I had some skills which could have been utilized but we lacked the materials to be more effective."

"I really didn't want to but I had no choice but to help. People were in need and I had to do something."

"I encountered problems during the search of the fields. It was disorganized. Several people were giving orders. I found this frustrating."

"My firefighting boots didn't fit right and I hurt my feet so I couldn't help with the bodies the next day."

"The only problem I had was that the muddy ground and the pollen from the corn made my allergies act up."

"One or more helicopters kept buzzing around overhead all day long Friday, making it extremely difficult to communicate with the team leaders. It was enough to make a person angry."

"Bodies in the trailers were placed so close together it was difficult to avoid stepping on another body when walking through."

"I didn't last long in the morgue. Two hours was all I could handle. After that, I helped in the morgue office."

"The bodies we worked with on Saturday morning were so terribly disfigured it was hard for me to concentrate on my work. Finding some body parts near the fuselage was also rather difficult for me."

"There was confusion on what could be picked up when we picked up personal effects."

"Fatigue was hard to overcome. I was always tired for the first week."

"I was hassled by security personnel while trying to do my job."

"I lost my patience with some of the news media people. I hung-up on a few of them."

**DID YOU EXPERIENCE ANY DIFFICULT CHOICES OR DECISIONS IN DOING YOUR DISASTER WORK?**

"It was difficult to decide who to help and/or who to help first."

"In triage it was difficult to let the dying die."

"I did not want to help in tagging or bagging the dead."

"Victims were yelling for help right away but I had to make the decision to put the fire out first for it would maybe save other lives. After the fire was knocked down, I helped survivors."

"It was difficult to decide who was dead or alive and who to choose to help, or to go on to a survivor. Also pulling bodies out of the fuselage was difficult."

"I chose not to help with the bodies in the main part of the aircraft. (I didn't want to see the ones we couldn't help)."

"I, along with one other fire fighter, had to decide if we were endangering ourselves while trying to fight the main fire in the fuselage."

"Immediately after I arrived at the crash site the first victim I found was a woman who was laying partially face down. She was severely burned. Most of her clothing was gone and her left leg was broken. I had to leave her because I felt she was probably going to die and I went to help a man about 10 feet away who was still strapped into his seat but also burned."

"The most difficult part was deciding to go up to the crash site immediately after the crash. I didn't want to go, but felt I should."

"They were asking for volunteers at the morgue and I had a great sense of guilt from not going down there."

"I felt guilty going home each night because I wanted to do more. I also wanted to work with the bodies in the morgue because I knew volunteers needed relief but I didn't feel I could handle it."

"The first day we were asked to leave the crash site without knowing everyone was accounted for."

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"As I was searching for survivors I was looking for live people and I kept thinking to myself if I was missing a person who was alive but not showing any sign of life."

"I was on the team that was supposed to recover bodies on Wednesday night. When the DCI made the decision to suspend the search, I asked the man, 'You're just going to leave these people out there all night?' He said, 'Where the - - - are they going?', I wanted to hit him and leave him on the ground, too. I know he didn't make the decision, but he didn't have to put it that way!"

"I had to leave Sunday due to an appointment. I felt inclined to stay and help, but I had to leave. I wish I could have done more."

"The constant harassment by news media requesting details was a problem."

**WHAT, IF ANYTHING, HELPED YOU HANDLE THE STRESS OF THE WORK WITH THE DISASTER AND ITS VICTIMS?**

"I ate to cope with the stress."

"My wife, family and my faith helped me to handle the stress."

"The stress teams on site helped me to deal with stress."

"Talking about it and crying helped."

"Discussion with my family helped me to handle the stress."

"Thinking of the people I helped and saved helped me to deal with the stress."

"Talking to my priest the night of the crash helped me cope."

"Being with my baby helped me deal with the stress."

"I keep in good physical shape and I kept myself busy."

"A personal relationship with God helped me."

"I tuned the disaster out."

"The support, food and housing from my 'second family' in Sioux City helped me deal with the stress. Food and drink were always available."

"The people that I worked with were probably my greatest strength."

"People were in need and this is what the guard and my reason for being there was about."

"The crash was the most difficult event of my life and the American military humor was always there. It may be called gallows humor, but it helped me to maintain the reality of the situation when it would have been easy to call it all a dream and participate accordingly."



"The comfort and understanding of my fellow firefighters helped me cope. Also, the support of my girlfriend was important. She would always listen and didn't ask continuous questions like many others."

"The professionalism of all those people doing things that had to be done was helpful in dealing with the stress. The cooperation of all to work together as a team putting aside personal ego was also important."

"I think being in a disaster situation before helped me prepare myself."

"Hard work and not thinking of the bodies as dead people but just bags of something helped me."

"Thinking of the work as a job, and not feeling sorry for the victims helped me cope."

"I felt responsible for the victims well-being. I knew that many people were relying on us to tell them that the body we had was their loved one."

"The work was something that had to be done. Basically I separated thinking about it and doing it."

"I told myself the remains were no longer the living souls of those who had perished."

"My agricultural background helped me, since I've seen livestock injured and dead livestock."

"Understanding that myself and my fellow firefighters did all we could do helped me cope."

"It seemed the more I thought or talked about my involvement with the disaster, the worse I felt. I dropped the subject and didn't think about it for a couple of days. After that, I was fine."

"When most people stopped talking about it I felt better."

**AT THE TIME OF THE DISASTER AND THE WEEK THAT FOLLOWED, DID YOU PROVIDE SUPPORT TO ANYONE WHO WAS UPSET BY THE DISASTER, OTHER THAN DISASTER VICTIMS THEMSELVES?**

"I provided support for co-workers. We all helped each other talk out our feelings."

"I provided support for my supervisor."

"I talked with people in the clinic."

"I talked with one nurse who was concerned that someone might still be alive out in the fields or in the fuselage."

"I directed people to quit working after they had been there too long and were exhausted but didn't want to leave."

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"At our annual training those of us who had been involved in the disaster talked about what had occurred. It felt good to talk and be with someone else who could grasp what we had seen."

"Persons working together in the morgue would lean on each other now and then when things built up and got to be too much."

"My wife is Assistant News Director for a local radio station. She was an eye witness to the crash and made the first reports. Once the excitement slowed, she began to realize the magnitude of the disaster. She had a good cry and felt better."

"I provided support at the volunteer fire department, debriefing. They told me they didn't want to be caught crying. I listened and gave them information. I listened to them until *they* were done talking."

"I tried to reassure unit personnel that we were doing everything that could be done. My mother was very upset that I was participating to the extent that I was. My wife and children seemed to understand."

"I talked and gave support that Sunday to individuals who had been there the whole time and seemed bothered."

**AT THIS TIME, DO YOU EVER THINK ABOUT THE DISASTER OR ITS VICTIMS?**

"I reflect on what happened."

"I feel sorrow for the victims."

"When I do runway checks, I think about the disaster."

"I think about the disaster when I fly."

"When news items come up about the disaster I think about it."

"I can't help thinking about the disaster because people are always asking me about it."

"I thought about the disaster after being at Air Guard this last weekend!"

"I think about the disaster a lot because I work at an airport!"

"There still are visible signs of the crash at the Base when I go down there. When I see them, it reminds me of the disaster."

"When I hear about other plane crashes I think about the Sioux City crash."

"Every time I see someone eating chicken I think about the disaster."

"Certain sounds and smells remind me of the crash."

"The sight of luggage brings me back to the scene. I remember seeing a lot of luggage strewn around."

"When I think about the disaster, I remember that it seemed so cruel leaving the dead out on the field the first night."

"After 6 weeks hardly a day goes by without United 232 being mentioned. I see relatives and friends and they ask about it."

"I can still see the dead people I covered with blankets and I feel sad that they didn't make it."

"I still wonder what the names of the dead were."

"I think about how or if the lives of the survivors have changed."

"Sometimes I see the dead people and wonder why I would spontaneously do so."

"When alone I can sometimes hear people calling for help."

"Faces of the people keep coming back, the smell of dead flesh."

"I think about the disaster quite a bit. I think about the 6 year old girl I had helped and of her family. The girl lived but lost her mother and grandmother. I think about the crash most everyday."

"Sometimes when airplanes fly by I catch myself looking up in the sky to make sure the plane does not fall from the sky."

"When I'm alone, like driving to work, I will think about the people trapped in the fire and what it must have been like."

"I find myself thinking about my activities the day of the crash. Usually this happens at night. I will wake up at night and cannot get the thoughts out of my mind."

"I occasionally relive seeing the black cloud of the crash. I review slides of the crash frequently in association with talks I have been asked to give."

"I still think about the earthquake, and also this crash. I think that everyone tries to evaluate their reaction and how they might have given more than what they did."

"Of course I feel remorse for the dead and their families, but I am proud to say we stopped at nothing to do everything we could for them."

"There isn't a day that goes by that I don't think about the crash somewhat. When we drive out to the end of the runway to arm aircraft, we drive over the exact spot where the tail section came to rest and right across runway 22. I can still see the bodies laying on the runway and in the grass."

"When I saw an accident the other day and there was a dead body on the street it brought back a flashback from the crash."

"I wonder if the survivors realize and can acknowledge that Jesus allowed them to survive for some purpose on this Earth."

"Occasionally I look back at my part and wonder what I may have done differently."

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"I wish I could have done more."

"I still have trouble talking about the children that died."

"I know that these things happen, but that you can't hide. So, I accept the risks with some trepidation. The accident reinforced the knowledge and fears."

"I feel that people are not much different than animals. Probaly because I worked in a beef packing house for 8 years. Therefore, I can easily distance myself from life/death issues. I sometimes wonder why I don't feel any remorse or what the "big deal" is all about. We handled 111 bodies in 5 days. At IBP, that's not even a half-an-hour's work."

**WHAT DO YOU THINK CAUSED THE DC-10 DISASTER?**

"The cause of the crash was bad luck."

"Engine #2 caused the crash."

"A malfunction caused the DC-10 to crash."

"The hydraulic lines were cut."

"An hydraulic failure caused the disaster."

"Faulty hydraulics and/or an act of God was the cause."

"~~Engine~~ turbine blade failure caused the crash."

"A bearing or material failure in the forward engine area caused the disaster."

"The disaster was caused by a failure of the fan section of the #2 engine."

"This was a "freak" accident that couldn't have been avoided."

"Poor design of DC-10 aircraft caused it to crash."

"I felt it became a disaster when the plane's landing gear broke through the concrete on the runway which sent it cartwheeling down the runway."

"The disaster was caused by somebody not doing their job right."

"Poor maintenance caused the crash. If a part has failed but the aircraft is flyable, I believe that the corporate pressure is to fly that aircraft even if it is not 100%."

"I am angry at the airlines. The first fear of DC-10's was in 1974 when the tail sections fell off of some planes. I have refused to fly on them since. I HATE THEM!"

"I still don't know what caused the crash, but I feel for some reason it could be terrorist tampering with our planes."

"I don't know what caused the crash."

"Who knows? It's time to be thoroughly checking all DC-10's."

"I don't know what caused the crash. I'll leave this for the investigators."

"As the USAF description from a previous crash goes 'impact with terrain'. I don't speculate on things that I don't have the training or sufficient data to form an intelligent opinion."

"Why it broke up I don't know, but I know the pilot did one hell of a job bringing her in."

"First of all, it doesn't make any difference what caused the crash. Second of all, after all that has been in the paper and on the news about a mechanical problem, how can you expect an honest answer? It was obviously mechanical."

**DO YOU FEEL THAT ANYTHING POSITIVE HAS COME OUT OF YOUR EXPERIENCE WITH THE DISASTER AND ITS VICTIMS?**

**YES:**

"People in Sioux City can all work together."

"I know I can stomach a disaster and going into Mortuary Science."

"The crash improved disaster recovery plans."

"I feel that other airports have learned from our experience."

"I am depending more on God since the crash."

"I am more optimistic since the disaster."

"I have learned that it makes no difference where you sit on an airplane!"

"It lets me know that none of us know the time nor the day when it's our turn to meet God. Also Sioux City is a wonderful city."

"I feel that this disaster is something for me to remember for the rest of my life. I'm still sad for all those people."

"I have gained a greater appreciation for life, and how quickly it can end."

"The Sioux City area has been labeled as, 'compassionate'."

"As a police officer I deal with a lot of undesirable people. Seeing this community pull together reaffirms that people are basically good."

"All the training I have been given has proved its worth. I learned that I can maintain control over my feelings."

"I have begun to express feelings and talk about emotions."

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"I never realized how much love and concern was present for people in distress."

"Definitely something good has come out of this! I feel less stressed over other things and closer to some of my family and co-workers. Also, I found a great family of one of the survivors."

"Faith in our fire/crash rescue personnel has increased."

"From the Guard standpoint it definitely gave our unit experience in handling such a disaster which may be beneficial."

"It will make my job somewhat easier when dealing with a fatal accident or a burn victim."

"It has been important knowing my little part has helped. God gave me an energy source that wouldn't quit."

"I feel that I have overcome a fear of going to the scene of an accident. In the past, my tendency was to drive on. Now, I think that I could stop and render aid."

"Even though I feel stronger for having participated, I also feel weaker and more vulnerable and a little less secure in my daily life, a little more threatened."

"I can not explain in words the difference this disaster has made in my life."

**NO:**

"If you were around the carnage, you are sure that no good is possible from such an event."

"My work was with the dead. I find it hard to see anything positive in that."

"Loss of life is too high a price to pay for a learning experience. In particular, I feel the airline industry will continue to push the limits and hope the law of averages works to their advantage."

"I feel whenever there is a great tragedy such as this crash you must consider the greater feelings. Such a loss is always a great negative."

"Granted, a lot more people lived than was expected, and it was lucky that it happened here in Sioux City where everyone was prepared for it, and it was less than 5 air miles to a medical center, but I still can't see anything positive about it."

"I don't know if any good came out of the disaster- ask me in a year or two."

"I can't think of anything positive at this time."

**DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT YOUR REACTIONS TO THE DISASTER OR THOUGHTS YOU WOULD LIKE TO OFFER?**

"At night I have a vision of people in airline seats that are upside down, helplessly dead, and it doesn't seem fair. Then again, is anything?"

"We, a few cooks, were able to go into the morgue to see what was going on. Things like that usually make me feel sick, but not this time. I thought it was interesting. I did see the bodies in my mind sometimes afterwards, even though I tried not to. I tried to get it out of my mind."

"On Friday, 8 September, I was reading the article in Life magazine about the crash and started to cry. I really don't think about it until someone else brings it up, then I see clear pictures of what I did on that Thursday."

"I was very upset by the accident but as time passed I became proud of my part. No, I'm not glad the event took place but I was proud to be a part of the Sioux City community that aided the victims in their time of need."

"It was a very traumatic event in my life. I do feel that so much good has come from this tragedy, that it was meant to be. My faith and family have been my stronghold in dealing with the things I saw. Thank you for your concern for people."

"Personnel must think about things prior to another situation like this and develop a plan of how to respond. Then individuals need to develop skills that will allow them to accomplish what it is they want to do. For example, personnel must learn how to perform 'CPR' if they ever hope to be able to perform when needed."

"I went to work at Briar Cliff College security. I would see the name and be thankful I didn't recognize it as the name of either someone I helped or of a dead body I counted. That way I couldn't put a passenger with a family. I didn't know if the family member was there for someone who lived or died. This made it easier for me to deal with them. I still can picture the first person I helped, he was in real bad shape, his t-shirt was over his face and the top of his head had been pulled off. We put him on a stretcher and took him to the triage area. They said his pulse and blood pressure were strong and we put him in an ambulance first. I don't know if he made it, I would assume he didn't. I don't want to know for sure."

"I am very close to one of the flight attendants we helped. I will not be at ease for many more months until I know she can in fact walk again. In general, my attitude stinks. My condition at the Air Guard is somewhat better, although I do feel there has been no recognition for my efforts which I feel were considerable."

"Being in my profession, fireman, loss of life is the last thing you want to see. We see so much death all the time. Since the disaster happened it has provided me with a tremendous amount of knowledge and self assurance in my performance. I have found out through the "baptism of fire" who I can and cannot trust in a serious situation which may be useful to know in the future. As far as the stress that I felt resulting from the crash, I feel that it was minimal because of the background experience I have. I have seen and dealt with death many times before. I feel that CISD [Critical Incident Stress Debriefing] teams are a *must* for all disasters, not only for the workers, but also for the survivors and family members. I am pleasantly shocked that the Air Force is taking action and

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gathering information on disasters which may someday help reduce the stress that is felt."

"The number of survivors who told how they felt surviving let you know what those who died were thinking. Families were not allowed to enter the premises. I think if they were, the emotional climate would have changed dramatically. For the helpers, the fact that the victims and survivors were "out of towners" cushioned some of the stress factors. The Red Cross brought to the scene, young inexperienced, impressionable young people who ought not to have been there. It happened in town and everyone could see the burning site or hear the streams of ambulances and stand vigil with their neighbors."

"After working in the morgue over the weekend, I had the following re-occurring dream: A body bag containing the remains of a badly burned child would be placed in a metal liner inside the casket, and the metal container was being made ready to seal. I heard a child's voice coming from the body bag calling 'help me' or 'mommy'. When I called the person in charge over to the casket to listen, the voice quit. They told me the child couldn't possibly be alive because it was so badly burned from the fire. When the official left, the voice returned, and I could see the body bag move slightly, but once again the official said that the child was very badly burned. They sealed the liner, and closed and sealed the casket, and placed the wax-coated cardboard shipping carton over the casket, and tightened the white straps. Then, I would be walking down the corridor where the caskets were lined up waiting to be transported. As I passed the last one, I slowed down and I could hear the muffled voice of a child coming from the shipping carton calling 'Mommy, help me!'" Then, the dream would end. I had this exact dream quite often after I worked that weekend, but I don't have it much anymore as of this writing."

"I stood guard in the cornfield by the main fuselage. We helped watch for flare-ups and we walked the area. I was with 4 other guard personnel. I will remember the full moon, smoke, mud, debris, and the poor casualties for as long as I live. I was very impressed with the United Airlines personnel, the coroners, the Red Cross volunteers, and the others who helped. I resented persons who were allowed to enter the morgue who weren't helping. I've grown because of this crash. But I never want to see another one."

"I felt very angry with people around me who wanted to go to the morgue just to see what was going on down there. I felt they were being cruel and unfeeling toward those poor people lying down there being taken apart and examined. I thought it was humiliating enough to die the way they did but to be put through what they were later was just horrible. Why did these people want to see what those people were having done to their bodies? Were they sick - or was I for getting so upset with them? I wonder about that sometimes - why am I so mad at these people?"

"God brought something real for me to face that I thought doesn't really happen. For what reason only He knows. As for helping and having feelings about it, God controlled it all, He took all of our hands and led us to do what needed to be done. No one but Him was in charge of that day July 19th. He brought this to us because He believed in us, and I believe He will always be with us when we have struggles with it."



"By talking about my feelings several things became apparent: 1) I still had bad feelings about Nam; 2) I was very depressed; 3) my job was to clean up the mess. After talking to my friend I talked to my wife about my clearer feelings and the pain I carried. By talking to her things cleared up. I then prayed to have my pain lifted and it was. From then on I have had no regrets nor apprehensions. Looking back one strange compulsion I had was seeing the last casket closed. I went out of my way to ensure my presence at that moment. It felt as though a big chapter of my life was finally closed. It did feel good."

"Even though I believe that I did all I could do at the time, I can't help but feel as though I could have done more. To an extent this feeling carries into my daily life and work. Its as if I'm trying to over prepare. I would guess that time and time alone is the only cure for some of these strange feelings."

"I guess the main feeling I had about the crash was helplessness. Most of the initial work was done when I got there and I really wanted to do something useful. As I stood there, hundreds of pieces of paper were blowing past me from the wreckage. Much of it was unopened mail. I started to pick some of it up. It seemed like an opportunity to do something constructive. Someone I didn't know, another pilot, chided me for being a 'souvenir hunter'."

**SIOUX CITY AIR CRASH:  
SIOUX CITY AIR NATIONAL GUARD NON-DISASTER WORKERS**

## NON-DISASTER WORKERS

### *Summary of Response Frequencies*

Surveys were completed by 101 individuals. Ninety-four percent (94%) of the surveys were completed between 1 September and 19 September 1989, approximately 2 months after the Sioux City Air Crash. The respondents were 86% male, 99% white, and 90% enlisted, with the majority having ranks from E4-E6. The median age of the respondents was 39, with a range from 18 to 56. Fifty-four percent (54%) were married. Occupations within the National Guard varied, with most working in munitions/weapons or administration. Outside of the Guard, most individuals worked in aircrew protection or safety. The education level was very high; 100% graduated from high school and 75% reported at least some college. For 90%, this was their first encounter with a disaster.

### **The Experience of the Disaster**

- Eighty percent (80%) still thought about the disaster. Thirty-six (36%) talked with their spouse about the air crash during the week following its occurrence. Forty-five percent (45%) talked about the disaster with their coworkers during the same time period.
- Seventy-three percent (73%) felt that something positive came from the air crash.
- Fifty-one percent (51%) experienced "moderate" to "a great deal" of stress following the disaster. Thirty-four percent (34%) supported others who were upset.
- Thirty-eight percent (38%) felt "moderately" to "very tired" the day after the crash, although 43% of these respondents returned to their "normal pace" within 3-4 days.
- Twenty-eight percent (28%) reported that their family was "very supportive" following the explosion. Fourteen percent (14%) said their friends were "very supportive" and 20% said their coworkers were "very supportive".
- Seventeen percent (17%) felt "very much" that "it could have been me" when thinking about the victims of the air crash.
- Fourteen percent (14%) had contact with survivors of the crash or their families.

Respondents were asked to think back to the week of the disaster, and reported "often" having the following reactions:

- Talked with their spouse/significant other about the disaster. (48%)
- Had thoughts of the accident and its victims. (38%)

### *Disaster Workers: Trauma and Social Support*

- \* Their spouse/significant other talked with them about the disaster. (33%)
- \* Spent increased time at work. (23%)
- \* Had strong feelings about the crash. (16%)
- \* Pictures of it popped into their minds. (14%)
- \* Felt very tired. (13%)
- \* Any reminder brought back feelings about the accident. (9%)

A wide range of symptoms was reported after the disaster. For this report, we selected the level of 20% of the group that reported symptoms at the level of "moderately", "quite a bit" or "extremely". The symptoms and the percentage of the population reporting this level of distress are listed below:

- \* Worrying too much about things. (31%)
- \* Were worried about sloppiness or carelessness. (20%)
- \* Feeling easily annoyed or irritated. (22%)
- \* Awakening in the early morning. (21%)

### *Summary of Written Comments*

#### **HAVE YOU EVER PARTICIPATED IN A MASS CASUALTY/DISASTER EVENT BEFORE?**

"I have been in the Military Police for 3 years. My work involved wrecks, riots, youth suicides, and plane crashes (2). I trained in disaster response on a disaster response team."

"In November 1987, I participated in a mass casualty disaster drill. I was the on scene commander for Air Guard Fire Dept."

"I have not participated in a mass casualty event, though I have participated in several crash recovery teams in the military. These were on a much smaller scale."

#### **HOW DID YOU FIRST LEARN OF THE DC-10 CRASH? WHAT WAS YOUR REACTION?**

"I first learned of the crash on TV. I was amazed at the survivors."

"I heard about the crash on the radio. I was very worried and concerned."

"My assistant told me about the crash. My reaction was that we had better get ready to help."

"My reaction to the news of the crash was, 'I'll never fly in a DC-10'."

"I felt sick to my stomach when I saw the crash. I watched the plane come over the hill and then disappear in a wall of smoke. I was watching from the roof of the plant."

"I learned about the DC-10 approximately 30 minutes before the crash through the Anthon Dispatch system. My first reaction was disbelief."

"My fiance called me at work 15 minutes before the crash and said there was a plane in trouble and they didn't think it would make it. He called back right after the crash and said he watched the crash."

"I learned of the crash through the news media. I worried about my husband because I did not know where the crash occurred at the airport."

"Since I am responsible for traffic in Emergency Outpatients where all the patients come through, I was nervous about clearing the area of nonessential vehicles."

"On July 19 in Denver I reacted with shock and curiosity. I needed to know the crash location, as our house is in one of the flight paths."

**DESCRIBE YOUR ACTIVITIES DURING THE FIRST HOURS AFTER THE CRASH. WHAT WERE YOU THINKING AND FEELING AT THAT TIME? DID YOU ANTICIPATE BEING CALLED IN TO ASSIST?**

"Numb is the best way to describe how I felt"

"I said a prayer for all. I anticipated being called to assist."

"After the crash I wanted to know if the plane was scheduled for Sioux City and, if so, were there people from Sioux City on the plane."

"I stayed close to the radio to keep updated on the events. I thought about the people involved and how they were doing. I stayed home in case there was a need for me to assist."

"I was glad I was not there. I had not realized the severity. I wasn't sure whether I would get called as I live 60 miles away."

"I helped search for casualties (dead or alive). I couldn't believe the massive loss of human life or the massive destruction of the aircraft. I did anticipate being called in for the Fire Department."

"I prayed for the victims, their families, the survivors, and the rescuers! I felt concern and alarm for what the scene might entail! Yes, as a matter of fact I did [anticipate being called in]; when I called to inquire I was told it was not necessary!"

"I got home to see if I had been called in yet, but there was no message. I tried to call down three times every 45 minutes, but there was no answer. Finally, on the fourth call I was told that there was no need to come down because they had plenty of help. This frustrated me because I really wanted to help."

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"I went to the blood bank to donate blood. I watched the TV reports in disbelief. I wanted to help but wasn't sure in what way to do it. I was on edge all evening."

"I was at home and had the flu. I was thinking that my fellow workers were right in the middle of this tragedy and felt sad and guilty that I was unable to help. I did not expect to be called in."

"I was glad that members of the 185th ANG were present to assist."

"My initial reaction was to help, but I was not sure what I would do."

"I was told my help was not needed."

**DID YOU HAVE CONTACT WITH ANY OF THE SURVIVORS OR THE VICTIMS OR THEIR FAMILIES?**

"Having worked July 19, 20, 21 at the college, I came into contact with several families. Subsequent to that, I visited several victims at the hospital."

"I watched the pilot's rooms and escorted family members to motels after they finished visiting patients."

"I helped many of the survivors and family members with recovering their luggage."

"I drove some of the survivors from Sioux City to Omaha to catch a train. They never did talk about the crash."

"A friend of ours has a cousin whose husband survived the crash. His father called to thank us for helping his son and visiting him in the hospital."

"I helped clean up after the crash. I walked through the corn fields looking for survivors, or bodies."

"I only had eye contact with survivors and families and at a fireman's picnic the next Sunday."

"I interviewed survivors."

**WHAT, IF ANYTHING, HELPED YOU HANDLE THE STRESS OF THE DISASTER?**

"My faith in God helped me to handle the stress."

"The fact that so many survived was somewhat comforting."

"Only time alone and talking to my wife about it for a few days helped me handle the stress."

"My wife working the day after at the morgue helped me handle the stress. It gave me the satisfaction that I could relate our experiences together."

"The close friends I have at the hospital helped a great deal."

"Finally talking to the base chaplain helped me with the stress."

"Twenty years as a fire fighter, past experience, and training helped me cope with the stress."

"Keeping busy working or just busy with something helped me to deal with the stress."

"Knowing that so much was being done by the City and the Guard helped relieve my stress."

"The fact that much needed to be done in a short period of time, and there were people in need helped me handle my stress."

"Knowing all things work together for good for those who love God helped me."

"To handle the stress I tried not to get personally or emotionally involved."

"I did not feel any real stress."

"The stress for me directly was minimal. My main concern was for the obvious stress being endured by the other Guardsmen participating in the rescue."

**AT THE TIME OF THE DISASTER AND THE WEEK THAT FOLLOWED DID YOU PROVIDE SUPPORT TO ANYONE WHO WAS UPSET BY THE DISASTER?**

"I provided support for students, staff, disaster workers, victims, and relatives."

"I provided support for several employees who were friends of mine who work in the outpatient unit."

"My cousin was there and I talked with him."

"I listened while co-workers and relatives talked about their experiences at the crash site, the hospitals and in the morgue."

"My father aided directly and was very sad and tired the whole week."

"I prayed for all involved."

**AT THIS TIME, DO YOU EVER THINK ABOUT THE DISASTER OR ITS VICTIMS?**

"I still can see some of the victims."

"I may always think of the disaster."

"I think about how hard the plane scraped the runway."

"Yes I think about the disaster, but it lessens as time passes."

"A good friend of mine is a stewardess and I often wonder about her safety."

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"The father of a girl I know was going to board the plane in Denver, but didn't."

"Yes, I think about the crash each time I go to the Air Base. I know it happened there, and the wreckage is stored there."

"I think about the victims mostly when I am at the guard or driving by the airport."

"Many people ask about the hospital and if it was busy."

"I think about what a large impact the disaster had on everyone in this city of 100,000, also those victims and families."

"I wonder if some survivors and victims [families] will ever be able to get their lives back to normal."

"From time to time I think about a family that I treated and loaded onto the ambulance."

"I had to review some of the slides from the disaster and I felt real sick looking at the bodies."

"I think about what, if anything, could I/we have done differently to make things:  
a) more comfortable, b) organized, c) less painful. Also, I wish local groups would stop falling all over themselves seeking credit and publicity."

"I tried to get to the airport after the crash but the highway patrol denied me access to get there to help. I feel maybe I could have helped in some way."

"I still get mad when I think about it because I was told 4 times my help was not needed, then I was told by others that they could have used twice as many as they had there."

**WHAT DO YOU THINK CAUSED THE DC-10 DISASTER?**

"An engine defect caused the crash."

"Based on news reports - failure of engine #2 was the cause of the disaster."

"I believe the tail engine fans disintegrated, due to high RPM or metal fatigue on the blades, and they exploded through the tail structure, tail cone, hydraulic lines and stabilizers. This resulted in the loss of all hydraulic fluids and certain disaster."

"Lack of maintenance caused the DC-10 to crash."

"Some lazy, irresponsible and hopefully now unemployed maintenance and inspection personnel were the cause of the disaster."

"I believe the airline used a faulty disk in the engine and that the airline's bottom line is money."

"Failure of the runway to hold the weight of the plane caused the crash."



"Very old planes in the air fleet are to blame for the disaster."

"The disaster was caused by landing gear failure."

"Winds out of the North West caused the plane to crash."

"The lack of control the pilots had to land the plane against the wind led to the disaster."

"Maybe a bird, stick, or other foreign object in the engine or mechanical failure caused the crash."

"I think someone purposely faulted the plane."

"A freak occurrence with no one to blame, at least at this time, caused the crash."

"It was time for a component of a jet aircraft to fail and unfortunately it was flying at the time."

"I have no idea of what caused the crash, except what was on the news."

"I don't have any idea what caused the crash. I haven't speculated."

**DO YOU FEEL THAT ANYTHING POSITIVE HAS COME OUT OF YOUR EXPERIENCE WITH THE DISASTER?**

**YES:**

"Perhaps I have gained a deeper understanding of myself and my own limitations."

"It proved that disaster preparedness does work in a situation like this."

"I have developed the ability to deal with my feelings and other people in a crisis situation."

"The disaster prepared me for unforeseen events that are possible where I would have to face death, war, or a natural disaster."

"I gained an understanding of how important it is to willingly listen to friends/co-workers talk about their participation. It really seemed to be good for them to talk about it."

"Most of us seem to look at things in a much different manner. Life is short at best."

"It makes one realize that the pettiness of life is unimportant."

"My spouse and I have learned more about each others feelings and how to talk to each other."

"I am more aware of my wife and children since the disaster."

"I learned that disasters don't just happen in other places, but can and will happen close to home."

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"The disaster was such a positive thing for our community. It has really brought us together."

"The disaster showed me that many people and businesses in our community really do still care about other people."

"The crash proved how well prepared our area was to respond to an emergency and showed us areas for improvement."

"The disaster experience has shown us that the people who were involved can and did handle the situation, and that the 185th are not just a bunch of weekend warriors."

"Our unit has proven to be top-notch once again!"

"Being new to the funeral profession, I was having a hard time dealing with death. Since the disaster the natural death of one person doesn't seem so bad."

"Hopefully the airlines have learned that they should have more inspections on engines and the whole plane."

"I think twice about flying."

**NO:**

"Nothing positive ever comes out of casualties."

"I don't think I have gained anything from what happened in Sioux City."

"The disaster has given me an extremely negative attitude about my unit and especially my section."

**DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT YOUR REACTIONS TO THE DISASTER OR THOUGHTS YOU WOULD LIKE TO OFFER?**

"My wife and I pause briefly whenever a jet flies over our house. We reflect on the terrible accident and possibility of a reoccurrence."

"I was unable to touch the clothing worn by my spouse when he was working on the crash site. I had to do laundry the night that he bagged the bodies and I just sat and looked at the clothing for a long time before I could even touch them. Then I washed them two times. I wasn't sure how my spouse would handle the situation. I was worried more about his mental health than mine. I still have an uneasy feeling about what happened. I feel I have to keep some things from my family about the real situation. One good thing was that my spouse and I have become much closer to each other."

"I guess I'm a unique person in this situation - I have been certified as a guidance counselor for 25 years but I was scheduled to leave for Lackland Air Force Base on Friday so I wasn't called. Being gone for 17 days immediately after the disaster gave me a feeling of "being left out". When I returned from school my

section chief and I were called in to help establish psychological counseling sessions for unit members and their families. As an open person I have talked with a number of unit members on my own. We still have some unmet needs and we are doing what we can. I feel my involvement with Flight 232 won't go away for a long time."

"I felt closer to this crash than others because I happen to know those involved in the rescue effort. By the time I was back on drill, at the airport, the talk of things had diminished considerably. I will certainly be willing to help this study in any way as I feel there are many people who can benefit from the information gained about stress patterns and management."

"Having worked with my co-workers at Morningside College some very long hours and weeks, and working on the Chamber Recognition Committee. I am distressed and perplexed at the "after effects". By that I mean, the City, Chamber, hospitals and others attempting to 'make PR hay' following the disaster. I find that to be distasteful. We need to get on with life and need to be careful in our efforts at 'back slapping' not to offend those people and organizations that we forget to recognize and thank."

"We [part-time Guard members] now feel like we were left out, and not part of the unit, as mostly the full-timers were used. But that is normal for our base. Not much sharing of ideas and plans between the full-timers and the part-timers, even if the part-timers have more experience."

"When I heard about the accident, I finished my job. I got in my car and tried to get to the base to help. The highway patrol had the highways closed. I showed them my military ID, but they would not let me through. I went home, called the base and they said that no help at that time was needed. I told the base to call if they needed me. I wasn't called. At times I feel bad that I couldn't help and that maybe I might have helped save someone if I could have been there."

"Even though I wasn't personally involved in the disaster I have noticed that some of the people I worked with in the Sioux City Air National Guard have changed. People that were once easy going and happy most of the time have become withdrawn and quiet. During the August drill I could almost pick out the people who were involved in the crash and those who were not involved."

"The feelings and stress I've had are somewhat different. As soon as I heard about United 232 I called the Base and offered my help in anyway, I was told I wasn't needed, plenty of help was available. I did not want to hear that! I called the next day and got the same answer, and the next day too. After constant media exposure seeing my friends and co-members on TV. I could not stay at home, which is 150 mi from Sioux City. I went to the base on Sat. knowing that I probably could not help by then, but I had to at least be there. I just wish I would have headed straight for Sioux City without calling!! This crash welled up emotions I've carried for 20 years. I volunteered for the draft in Dec. of 1967 with a draft number of 352; I re-enlisted for another year in the Army during the Tet Offensive of February, 1968. I did everything but buy my own ticket to Viet Nam and was not sent! I have always regretted not being a part of 'the action', of not truly fulfilling my part, of having missed something. United 232 was a repeat of the Nam era. I was standing on the outside looking in. I wasn't needed! My stress, feelings, emotions haven't been with the victims or families they have been with myself!"

"I harbor a lot of resentment towards the accident because of not being called to help. It is affecting my performance as an airman and a person. Every time I read or hear something about the crash, the resentment comes flooding back full force. It blocks some of the more sensitive emotions I might have had about the crash. I especially feel resentment when people talk of the rescuers as being 'heroes'. My thinking is that they are not heroes by nature, but they were *chosen* by those in the position to select their favorites. They were given an opportunity to do good, while others were denied that same opportunity. And it bothers me very much that I wanted to help the victims, but that my supervisor would not allow me to. He would not allow me the chance to help my fellow man. He would not *allow* me to perform my duty as an SP and an airman. It especially angers me since members of the Guard from Des Moines, IA, and units in Nebraska and South Dakota came to assist when the 185th hadn't even attempted to use all of its resources. As far as I'm concerned, the 185th is a disgrace to all the service stands for."

**SIoux CITY AIR CRASH:**  
**SIoux CITY SPOUSES AND SIGNIFICANT OTHERS**

## **SIOUX CITY SPOUSE/SIGNIFICANT OTHERS**

### *Summary of Response Frequencies*

Surveys were completed by 196 individuals. Sixty-five percent (65%) of the respondents were spouses/significant others of National Guard members who worked at the air crash site. Thirty-five percent (35%) were spouses/significant others of those who did not work at the crash site. Ninety-five percent (95%) of the surveys were completed between 1 September and 19 September 1989, approximately 2 months after the Sioux City Air Crash occurred. The respondents were 95% female and 99% white. The median age was 37, with a range from 17 to 67. Seventy-six percent (76%) were married. The education level was very high; 96% graduated from high school and 58% reported at least some college. For 94%, this was their first encounter with a disaster.

### **The Experience of the Disaster**

- \* Ninety percent (90%) still thought about the disaster. Sixty-two percent (62%) talked with their spouse about the air crash during the week following its occurrence. Thirty-five percent (35%) talked about the disaster with their coworkers during the same time period.
- \* Eighty-five percent (85%) felt that something positive came from the air crash.
- \* Fifty-six percent (56%) experienced "moderate" to "a great deal" of stress following the explosion. Seventy percent (70%) supported others who were upset.
- \* Fifty-four percent (54%) felt "moderately" to "very tired" the day after the crash, although 41% of these respondents returned to their "normal pace" within 3-4 days.
- \* Forty-four percent (44%) reported that their family was "very supportive" following the disaster. Thirty-five percent (35%) said their friends were "very supportive" and 26% said their coworkers were "very supportive".
- \* Fifteen percent (15%) had contact with survivors of the crash or their families.
- \* Fifteen percent (15%) felt "very much" that "it could have been me" when thinking about the victims of the air crash.

Respondents were asked to think back to the week of the disaster, and reported "often" having the following reactions:

- \* Talked with their spouse/significant other about the disaster (68%)
- \* Had thoughts of the accident and its victims. (66%)
- \* Their spouse/significant other talked with them about the disaster. (60%)
- \* Spent more time with their spouse and children. (36%)

## *Disaster Workers: Trauma and Social Support*

- \* Had waves of strong feelings about the crash. (25%)
- \* Thought about the crash when they didn't mean to. (24%)
- \* Pictures of the crash popped into their minds. (23%)
- \* Other things kept making them think of the crash victims. (22%)
- \* Felt very tired.(17%)
- \* Felt as if the crash hadn't happened or wasn't real. (17%)
- \* Felt lonely and blue. (15%)
- \* Any reminder brought back feelings about the accident. (14%)

A wide range of symptoms were reported after the disaster. For this report, we selected the level of 20% of the group who reported symptoms at the level of "moderately", "quite a bit" or "extremely". The symptoms and the percentage of the population reporting this level of distress are listed below:

- \* Worried too much about things. (41%)
- \* Felt easily annoyed or irritated. (32%)
- \* Headaches. (31%)
- \* Felt low in energy or slowed down. (26%)
- \* Sleep that was restless or disturbed. (26%)
- \* Felt critical of others. (24%)
- \* Were worried about sloppiness or carelessness. (24%)
- \* Had pains in lower back. (23%)
- \* Feelings were easily hurt. (23%)
- \* Felt tense or keyed up. (23%)
- \* Awakening in the early morning. (22%)
- \* Others not giving them proper credit for their achievements. (21%)

## *Summary of Written Comments*

**HAVE YOU EVER BEEN IN A MASS CASUALTY/DISASTER EVENT BEFORE?**

"I took part in the Titan II complex 533-7 incident in 1978 McConnell AFB, KS. I was a missile maintenance technician involved with cleaning up the site and renewable hardware directly following the accident to include decontamination and transport of missile remains. 3 friends died."

"Before working for a neurosurgeon, I worked full time in the Emergency Room and we've had mini-disasters up to 17-24 people from ammonia leaks and motor vehicle accidents."

"When I was around 8 years old we had a bad tornado in our town; the trailer park behind our home was demolished, and a few people died."

"I work at a local hospital. At times there have been car wrecks involving three or four vehicles and resulting in serious injuries."

"While I was in the Air Force - WWII- I saw a lot of casualties."

"I helped process bodies during the Beirut Embassy Bombing in 1983; In 1985 I X-rayed victims of the Frankfurt Shopping Center Bombing."

**HOW DID YOU FIRST LEARN OF THE DC-10 CRASH? WHAT WAS YOUR REACTION?**

"I learned of the crash on television. My initial reaction was shock followed by concern for the people involved."

"I heard about the crash on the radio. I reacted with shock and disbelief."

"I was at the grocery store. A lady walked in the store and said the DC-10 had just crashed at the airport. My husband was on guard duty at the Air Base when the plane crashed. My first thoughts were about him. I needed to know if he was alright."

"I first found out about the crash by word of mouth. The people I work with started coming in the office and telling what they had heard on the radio."

"My mother-in-law was due to arrive at Sioux City at about the same time, on a United flight from Denver. I was fearful at first that my husband would be at the airport when it occurred."

"I learned of the crash via a telephone call from a daughter in Iowa City. She was concerned that her father was involved as she knew he was scheduled to fly."

"Our office is next to the hospital and I was calling the ER for some orders and a friend who answered said, 'I can't take them now we're getting a plane crash in. Call back.' We had alerts before for small plane crashes and I didn't realize how bad it was until we heard it on our office radio."

"We live about 1 mile from the crash site. We heard and felt it when the plane hit the ground. My husband, who works at the Air Guard, called home immediately to see if it hit us. I reacted with surprise."

"I'm a radio news reporter. I heard the preliminary scanner reports. I went to the airport, saw the plane go down and watched it crash. I screamed into the two-



*Disaster Workers: Trauma and Social Support*

way that the plane had crashed. I ran to the fence to help but couldn't. I started to shake. I was very emotional."

**DESCRIBE YOUR ACTIVITIES DURING THE FIRST HOURS AFTER THE CRASH. WHAT WERE YOU THINKING AND FEELING AT THAT TIME?**

"I was home preparing dinner. I thought of the families who would never eat together again."

"I was thinking of all the communities helping at the crash site."

"I was thinking why don't they inspect planes better, and also that I will never fly."

"After the crash I worked by routine and felt numb. I cried about the deaths and for those left."

"We were just arriving in Carlisle, PA, after leaving Boyden, IA, so we didn't have the opportunity to have constant information on the crash. I was amazed that an airliner would crash in our local and smaller Sioux City."

"My eyes were glued to the TV trying to find out more information. I felt sorry for the people who died, and for the living. I was sad and grieved for all those people."

"I had feelings of sadness and helplessness. I called to see if I could do anything like give blood, but not get in the way."

"I watched the news several times to find out what was going on. I was wondering how anyone could survive such a terrible crash and how my husband was."

"I learned that my husband's Air Guard unit was helping in the rescue. I was afraid that he might be injured in the wreckage or the fire. I did not think about the things he might have to see. I busied myself with family matters."

"My heart pounded until more news released. I talked with co-workers. I realized this was not the flight that a relative would be on. I resigned myself to 'wait and see'."

"I tried to reach my mother to see if my dad's building was hit at the airbase. I was afraid the plane crashed into his building and killed him. I was sad listening to the ambulances go by and watching a cloud of smoke cover the Eastern sky."

"I called friends to prepare a place for my husband to stay in Sioux City for a few days."

"After hearing about the crash, I turned on the TV and watched. They announced that they needed help from fire and medical personnel. I made a couple of phone calls to off duty personnel (nurses, fire and other medical spouses) that I knew were not at work. I felt shock."

"I still work part time in the ER so I debated whether to go home or to go over to the ER. One of the Doctor's with me asked, 'Are you going to the ER?' I said, 'yes' and after we left they called for me to come in anyway."

"I did live reports from the airport for another 5 hours. I did the very 1st report on the crash, at 4:02 pm. I felt emotionally drained and wanted to tell people what I saw."

"My husband and I were taking the children to the mall to see Peter Pan. On the way there, we saw the crash. I left my husband at the crash site and I took the children to the show. I thought how bizarre that I was watching Peter Pan while my husband and others were suffering through the crash. I cried, and had an upset stomach for several hours."

"First, I was sure the plane had landed on the Guard unit. Then, I recalled a vision I had last June when my niece and I went to Sioux City. It was of a crash. I was awake and said, 'Oh my God there are bodies everywhere'. Then we saw a bad accident on the way home."

**DID YOU HAVE CONTACT WITH ANY OF THE SURVIVORS OR THE VICTIMS OR THEIR FAMILIES?**

"I did an interview with one of the survivors. He told the whole story."

"My husband became good friends with the pilot-trainer on board. He asked me to accompany him to the hospital to visit the pilot and to meet his wife and children."

"As an RN, I volunteered to help at the hospitals. All but 2 of my assigned patients were survivors."

"I helped at Briar Cliff from Wednesday until the following Tuesday. I helped both victims and family members. I became closely involved with one family who lost a sister and brother-in-law."

"I work at a department store. The survivors came in to buy more clothes for their stay. We are only 4 blocks away from the hospital. They all wanted to visit and talk about their daughter or son."

"My husband carried the little boy from the airplane that was photographed. I met the father of the boy and his brother."

"We talked to some of the survivors in my husband's office. They were using the phones to call home. When they told their families they were alive it was hard not to cry."

"There's not enough paper here! I arrived before any patients and there were people, carts, and doctors everywhere. There were nurses in each room. The phones were ringing non-stop so I stayed at the back desk and helped another RN with the phones. After a few hours it slowed and I helped give tetanus shots and took care of a stewardess. I can't believe how the media bothered us with phone calls during the event! Here we were trying to treat those who had just arrived and all the networks and radios were calling for body counts, survivors, and victims!"

**WHAT, IF ANYTHING, HELPED YOU HANDLE THE STRESS OF THE DISASTER?**

*Disaster Workers: Trauma and Social Support*

"Nothing helped me handle the stress."

"Work took my mind off the disaster."

"Local news coverage helped me handle the stress."

"God and prayer helped me handle the stress."

"I am a born-again Christian and I just prayed about it."

"Knowing my friends and family were safe helped."

"I felt very sad for the people but I did not have stress because I was not directly involved with people."

"The detachment of distance helped. It was more of a hyper experience. Something exciting had happened in our backyard."

"Knowing that there were many survivors helped me handle the stress."

"Talking to other people helped me deal with the stress."

"The friendship of a survivor-family was very powerful. Also, the news accounts of the excellent response Sioux City gave was very good to hear."

"Talking with my family and friends, especially my mother and the wife of a National Guardsman, helped me to handle the stress."

"Crying and talking to Guardsmen and other Red Cross volunteers helped me deal with the stress."

"Just talking about the crash helped. I also took gifts to the three children at St Luke's. It made you feel better just being able to do something small."

"As a Sioux City Air Guardsman's wife I knew the people involved would be well cared for. I also prayed for these people."

"Previous experiences with accidents, and being a licensed pilot myself helped me cope with the stress. I realize what has to be done first and what can be left until a later time."

"ER nurses *are* ready for anything. It was like a bad day at work. You are so busy you just do what you have to, never thinking of yourself."

"I didn't hear from my significant other for 3 days but from seeing the pictures on TV I knew the Guard unit was helping, but I was concerned he would have a break down."

**AT THE TIME OF THE DISASTER AND THE WEEK THAT FOLLOWED DID YOU PROVIDE SUPPORT TO ANYONE WHO WAS UPSET BY THE DISASTER?**

"Basically, I gave support by just being there and giving lots of hugs."

"I simply asked my husband several times if he was alright."

"I tried to get my significant other to verbalize his feelings."

"I gave support to my husband who helped on Thursday with the location of the deceased."

"My husband needed to talk about it quite a bit, and to cry. We did a lot of both."

"My husband was over there and saw the morgue and saw 2 little boys which bothered him. We talked a great deal about it."

"I supported my son, an 18 yr old, who helped carry body bags and helped in the morgue on Thursday."

"My son was upset about the plane crash and that people had died. He kept asking if daddy died at Sioux City Fire Station plane crash."

"My 2 best girlfriends were out in the garage area where the ambulances arrived triaging and two other friends went to the morgue that evening."

"My news director never went to the crash site. She could only picture the experience."

**AT THIS TIME, DO YOU EVER THINK ABOUT THE DISASTER OR ITS VICTIMS?**

"When I see the news and they mention it, or when an airline commercial is shown I think about the disaster."

"The disaster is still in the news."

"It's very difficult to forget something like that and it's still in the news."

"I think about the crash especially when pilots, crew, and passengers are on TV or in the newspaper."

"I feel our TV stations almost gave it *too much* coverage, especially channel 4 which kept showing the airline tumbling and said 'News Center 4 was there'. It was disgusting."

"I only think about the crash because my husband still talks about it occasionally. Otherwise I don't believe I would think of them now."

"I have written articles and given presentations on the role of nurses in the disaster. I have begun a nursing research study."

"My husband has been asked to speak to several groups in this area and to give slide presentations. Usually he views the slides before he gives the program. This promotes discussion of the events."

"I often wonder how the families of the deceased are doing and also how all of the survivors are coming along."

*Disaster Workers: Trauma and Social Support*

"When I look back at pictures of the disaster, or when I see planes in the air, I see faces of the people I took care of after the crash."

"We still do stories on the disaster. I cried three times. Once when the state medical examiner held a news conference; when I read about a family in Des Moines Register; and when I heard the tower tapes."

"I question why one person would die and another in the next seat would live."

"I think that I would not like to fly. If I did fly I would wonder about any noise I hear while flying."

"I am more concerned about the rescuers who are having trouble."

**WHAT DO YOU THINK CAUSED THE DC-10 DISASTER?**

"Shearing of the hydraulic lines caused the crash."

"Engine failure caused the DC10 to crash."

"Malfunctions in the plane caused the crash."

"Airplane failure caused the disaster."

"The engine on top broke apart."

"A structural failure of a part of the #2 engine which caused all 3 hydraulic lines to be severed; therefore major control of the aircraft was lost."

"The hydraulics had a big part to do with it. I also think that while they were coming in to land, that as they were trying to slow by using the engines, that the right engine might have slowed down faster than the left, causing the right wing to drop."

"Directly it was the hydraulics, but it was also poor inspection, carelessness, and stupidity."

"The deregulation of the airlines brought on by the Reagan Administration led to sloppy maintenance of aircraft."

"Faulty airplane parts and faulty mechanical inspections."

"Poor maintenance and inspections of the plane caused the disaster."

"The DC-10 wasn't properly checked out."

"Not grounding the plane long enough to properly work on it lead to the disaster."

"I think that some bad parts were used and they fell apart."

"The cause of the disaster could be either apathy of repair persons or repair persons being overworked or not supported, who knows?"

"Neglect or a bomb from terrorists could have caused the crash."

"I would hate to think some foreigner *paid* someone to meddle with the engine."

"Terrible luck caused the disaster. It could have been worse. It's amazing 184 lived."

"I don't know what caused the crash."

"I don't know. But it is funny that so many airplanes have crashed in the last few years.  
I guess we have to leave it to *God*."

"I'll leave speculation of the cause to the experts."

**DO YOU FEEL THAT ANYTHING POSITIVE HAS COME OUT OF YOUR EXPERIENCE WITH THE DISASTER?**

**YES:**

"Awareness that things like that can happen."

"I am thankful to be alive and well and family members are too."

"I feel close to my family and friends and value them more dearly."

"The experience helped me to appreciate life."

"I have learned life is too precious to waste on petty arguments and being upset with other people."

"It was positive that there were survivors and that everybody worked together as a team."

"The readiness of the National Guard to respond to such disasters and the speed with which they did was a positive outcome."

"I feel my husband was able to help many people and that he was 'meant' to be there. I'm very proud of him and all those at the Sioux City Air Guard."

"I feel I have a better understanding of the role the National Guard plays in each state."

"I think the disaster brought the community together and made people more aware of how well they can do in the face of disaster."

"We learned that Sioux City is ready and equipped for disaster."

"The crash has taught me that I can be helpful in a disaster and that I do have inner strength."

"There were three positive outcomes from this disaster: 1) knowing that people recognize that my husband did an exceptional job 2) getting reacquainted with friends who telephoned and sent newspaper clippings 3) having a better appreciation of being physically and emotionally well."

"Unfortunately, I learned a lot about television news. I made some extra money and learned that you have to live every day like it's your last."

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"The disaster reminds me that other people have to deal with a much bigger tragedy than I do."

"Every time something bad happens I rationalize as to how much worse it could have been."

"Hopefully they will improve airplanes and disaster plans to assist victims. Also, people who trusted God through the disaster were able to bear witness to that fact."

"I developed a stronger faith in God!"

"This disaster clarified my attitude about death."

"We cherish family relationships more - we try not to leave anything 'unsaid' or 'undone' before a separation. I dressed more practically for a recent airline trip with myself and children, and I used a snugly denim front carrier for my 1 year old on the plane to keep her strapped to me and protected. I wanted to feel *prepared*, not frightened. It was a good experience to fly again."

NO:

"I feel very detached. It does not concern or effect me."

"Something negative came from the disaster. I keep telling my husband he should seek help. The disaster experience has caused him to drink heavily and he didn't come out of his room for 3 days."

"I feel that the disaster has put a stress on our family because my husband has been uptight since the day of the crash."

DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT YOUR REACTIONS TO THE DISASTER OR THOUGHTS YOU WOULD LIKE TO OFFER?

"I think the United States should spend money on planes instead of spending it on outer space. I don't care what's on other planets."

"I have had much more than the average person's involvement with aviation trauma due to my husband's dual designation as an aviator and Flight Surgeon. He served one year as a Medical Aviation Accident Investigator while in the Navy. I am also a licensed pilot. Since living in Denison, IA from 1972-now, our lives have been changed by several light plane fatalities. I can accept that these fatalities were the result of human error. I do find it a little harder to accept mechanical failure on a regularly maintained aircraft. I hope the crew of United 232 can feel good about the 184 passengers, who, because of the crew's skills, survived."

"I called the Air Base and asked if there was some way I could help out, possibly the kitchen. Our 16 yr old daughter and I went out on Sunday, July 23rd and served food all day. We started out at the base, and later relieved the Red Cross workers at the crash site. We met many caring people; everyone appreciated anything that anyone did. People were open, honest, and went about their

business. They knew what had to be done and did it. It was a good experience for us to be able to help."

"My husband is in the Air Guard, but he had thought that unless they called, people were to stay away. So he didn't go out to the base. I'm his spouse and I'm an RN in MHC/ER. I'm also in the Navy Reserve. I saw a lot of charred bodies go by the desk as I answered phones. Every room was full. People from Colorado kept calling. We knew no names at first and couldn't help them. I felt so helpless when they cried on the other end of the line. They also kept calling out from rooms 'we need a neurosurgeon stat!' Only 1 man and 4 rooms calling out at the same time. It was sad."

"My husband, a 17 year Air Guard member, was involved much more than myself. I worked the morgue and as a person who was never able to watch her children be vaccinated, I was a very strong person - like steel. I had a job of 'charting' and I feel I did it well. My husband also spent a day in the morgue, so we were able to share stories. Our debriefing was held with the doctor who was assigned to Captain Haynes. He is a wonderful person, and he kept thanking us for coming, as we were open and seemed to help several people there."

"My only comment is that the voluntary debriefing sessions provided for the members of the Air Guard who had worked many many hours and performed many unusual and unliked tasks should have been mandatory. Many of these people didn't really have time to think about whether they wanted or needed *anything*. Since the debriefings were voluntary and they were way behind on their own work, the meetings were simply skipped. Had they been mandatory, I feel every one of them would have benefitted, even those who didn't 'need' it."

"On a daily basis I thank God for my family - our love and support of each other. I will never forget what I was doing when the crash happened, or the look on my husband's face the time he came home after helping to clean up the area, removing dead bodies from the fuselage. At that moment I felt helpless and all I could do for him was to listen, hold him and tell him how much I love him. I am afraid of flying and have only managed to do so once and I am sorry to say that unless it was a major event I would not fly again."

"I feel I became desensitized to the crash and all its information. Even though it happened here and I went to almost everything, I felt like I wasn't really doing it. Even though I just made my last statement, I read and look for any stories or more information on the crash. It is very confusing. I burned my hands in a fire two years ago and I remembered seeing my hands on fire. It's very painful, I can't imagine being burned all over. Sometimes when I'm in a large place I think of the possible tragedies that could happen. I immediately look up at airplanes flying in to see if I think they are too low."

"My response is concern for my husband because he has not been able to talk about the crash and has been drinking heavily, after he had quit. He was very despondent. I wanted him to go for help to a professional who could relieve some of what he held inside. He insists it just takes time, of course that could be an excuse to drink. Now each time he goes back to Guards he goes on a 2-3 day binge before he leaves then tries to quit again. Thank you for including us in your study. I wished I could have shared in helping the families. I had a sister die at 31. I know the pain a bit."



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"I was worried about my husband because of all I was sure he was seeing and doing and yet he didn't want to talk about it. He has kept our bedroom windows shut at night (we have no air conditioning) explaining, 'you don't know what kind of nuts are running loose out there'. He has been very irritable and crabby since the crash."

"The air crash in Sioux City changed many lives here in Siouxland. I had one family member ask me why I put myself through this? It was something that happened and without thought or hesitation I went to help. But I guess that's the type of person I've always been. That's probably why I'm a nurse. We at Briar Cliff College (BCC) thought we were getting up to 30 of the survivors. By Saturday night we had over 400 people on campus. None of us had ever been trained on anything like this. We just did what we had to do to help all persons concerned. First we felt joy for those who had lived - then sorrow for the families who came with hope their loved ones had lived, and then watching their hope turn to the reality of death. On Saturday the family members were taken to the airport to gather personal belongings. That was hard. You felt so sad yet they seemed so happy to have something to hang on to. Sunday and Monday were very hard on all of us at BCC. The people started leaving and we were left with so many feelings. We were on such a high from tension and how do you get down? I had worked mostly at Briar Cliff since the night of the crash until Monday. But my husband had been at the Cliff since Thursday morning when he was called by his Army Reserve Unit on Friday. His unit worked at the airport Saturday and Sunday helping with the last of the bodies. He worked with the dentist. It was so hard. On the following Wednesday we were taken to the airport to view the crash. On Thursday my husband's unit left for 2 weeks Summer Camp. We all, at home, felt the pressure when he left. We were not getting enough sleep, not eating right, and there was tension all the time. It was hard getting off that high we were all feeling."

**SIOUX CITY AIR CRASH:  
SIOUX FALLS AIR NATIONAL GUARD**

**SIOUX CITY AIR CRASH****SIOUX FALLS AIR NATIONAL GUARD PERSONNEL*****Summary of Response Frequencies***

Surveys were completed by 421 individuals. Ninety-three percent (93%) of the surveys were completed between 9 September and 30 September 1989, approximately 2 months after the Sioux City Air Crash occurred. The respondents were 86.2% male, 98% white, and 85% enlisted, with the majority having a rank of E4-E7. The median age of the respondents was 36, with a range from 18 to 60; 63% were married. Occupations with the National Guard were varied, with most reporting work in munitions/weapons or aircraft systems maintenance. Outside of the Guard, most worked in administration or as students. The education level was very high; 98% graduated from high school and 72% reported at least some college. For 88%, this was their first encounter with a disaster.

**The Experience of the Disaster**

- \* Fifty-eight percent (58%) still think about the disaster. 19% talked with their spouse about the air crash during the week following its occurrence. Twenty-two percent (22%) talked about it with their coworkers during the same time period.
- \* Fifty-seven percent (57%) feel that something positive came from the air crash.
- \* Twenty-five percent (25%) experienced "moderate" to "a great deal" of stress following the disaster. Twenty percent (20%) supported others who were upset.
- \* Forty percent (40%) felt "moderately to very much" that "it could have been me" when thinking about the victims of the air crash.
- \* Twenty-six percent (26%) anticipated that their National Guard unit would be called to assist at the crash site.
- \* Twenty-six percent (26%) felt "moderately" to "very tired" the day after the crash, although 30% of these respondents returned to "normal pace" in 3-4 days.
- \* Twenty-five percent (25%) reported that their family was "fairly" to "very supportive" following the air crash. Twenty percent (20%) said their friends were "fairly" to "very supportive" and 23% said their coworkers were "fairly" to "very supportive".

Respondents were asked to think back to the week of the disaster, and reported that the following reactions occurred "often":

- \* Having thoughts of the accident and its victims. (26%)
- \* Talking with their spouse/significant other about the accident. (21%)
- \* Spending a great deal of time at work. (12%)
- \* Spouse/significant other talked to them about the air crash. (12%)

"I first learned of the crash on the TV news. I reacted with short term depression. Yet another several lives lost. This time close to home."

"I learned of the crash by a local radio station. I wondered if any passengers survived and if we were going to be called to assist."

"I learned of the DC-10 crash by word of mouth from co-workers. I immediately watched CNN news for details."

"My reaction was of sincere interest, from two standpoints. I fly the DC-10 for American Airlines. I investigated major aircraft accidents as a flying safety investigation officer while on active duty in the USAF (1977-1989). Proximity to Sioux Falls was coincidental."

"I felt *horror* watching the video."

**DESCRIBE YOUR ACTIVITIES DURING THE FIRST HOURS AFTER THE CRASH. WHAT WERE YOU THINKING AND FEELING AT THAT TIME?**

"I felt sorry for victims."

"I felt concern for victims and rescuers. I was certain the guard was quick to respond."

"I felt anguish and hoped that it wasn't pilot error."

"I felt intense interest about the cause, death toll, and response of ground personnel."

"Upon getting home from work, I immediately turned on the TV to get more news. I felt deep sorrow and helplessness."

"I was giving a firefighting class in Aircraft Fire Fighting. I was waiting for a call from the Sioux City Fire Chief thinking he might call for help."

"I wondered if anyone I knew was hurt. I thought about a recent airplane trip me and my family were on."

"I continued to work. I wondered what are my counterparts in Sioux City doing right now? I wouldn't want to trade places with them."

"I prayed for God to help those in despair and to ease the pain of those injured."

"I wondered what people felt just before impact."

"Remembering the incident we had at Sioux Falls when a co-worker was killed. He was running the snow plow and a plane on landing sheared a wing. I heard the impact of plane and snowplow in the Engine Shop office."

"I was traveling at the time by plane. I thought that the odds of my plane crashing were very low. One of my flights was cancelled as a result of the crash."

"I was in Rhode Island. I was apprehensive because I was to fly United Airlines home in two days."

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"It made me think about how vulnerable humans are, and how easy it is for us to get killed. I was afraid."

"Life went on as normal."

**DID YOU ANTICIPATE BEING CALLED IN TO ASSIST?**

"We at the Sioux Falls crash/rescue section have very good work relations with the Sioux City ANG. I thought maybe our unit would have to provide some support."

"I wondered if they had enough manpower to keep the situation under control."

"I thought maybe our unit would have to provide some support."

"Yes and No. A part of me wanted to go to Sioux City and help in any way I could. But a part of me didn't want to go, because there would be nothing worse than witnessing a major disaster."

**WHAT, IF ANYTHING, HELPED YOU HANDLE THE STRESS OF THE DISASTER?**

"My outlook helped me handle the stress."

"Thanking God it was there not here."

"Faith in God helped me handle the stress."

"Time helped me deal with the stress."

"Running helped me deal with the stress."

"Sex helped me handle the stress."

"Getting close to loved ones lessened the stress."

"Knowing I had no acquaintances on board helped me handle the stress."

"Being a city firefighter for 22 years and 26 years with the ANG made the disaster less stressful for me."

"Discussion with family and business associates eased my stress."

"Learning of follow-up on details helped."

"The fact that so many survived helped me deal with the stress."

"Reminding myself that flying is still the safest form of travel helped me handle the stress."

"Talking about the crash with friends and other people helps."

"Talking about the crash helped. I had to drive to Sioux City the day after the crash. That made it a reality."

"I felt far enough away. There are air crashes, car crashes, and natural disasters all the time and this was another. I felt a very strong professional interest in the disaster."

"I think the fact that I've spent a year in Vietnam and was involved in many similar situations helped. I took it fairly calmly with the knowledge that these things happen."

"Distance helped. I wasn't actually there to "feel" the impact on the town and residence. I realized though that it could have been anywhere."

"Reasoning and inner strength helped me handle the stress. Out of all bad comes something positive or educational. Loss of life is tragic, but through this loss future disasters may cease."

"Life goes on. It sounds bad because you have more people in a plane than in a car."

"As a pilot, I have lost friends in aviation accidents. I think that past experience in dealing with those situations allowed me to work through this disaster with very little problem."

"That the pilot did the best he could to bring the plane down and all of the people in the crash were helped in the best of care that a human being could do."

"There really is no point in getting stressed or upset about something you can't control - you just help out where you can."

"I experienced very little stress."

I can't say I was *stressed*, but I was concerned."

"People die every day."

**AT THE TIME OF THE DISASTER AND THE WEEK THAT FOLLOWED WAS ANYONE YOU KNOW UPSET BY THE DISASTER? IF YES, DID YOU PROVIDE SUPPORT TO ANYONE WHO WAS UPSET?**

"I listened to their concerns."

"My wife's sister could have been on that aircraft."

"I reassured my mother who was also flying with me."

"My parents have always been afraid of flying and this didn't help."

"My wife was a little concerned about patient care for the survivors. She is an RN so it is just her nature. We talked about the fact that many medical people were already there and doing a good job."

"My sister lives in Sioux City, she and her family were very upset by the crash. I phoned to see how she was doing and to try and comfort her."

"A friend of mine was upset by the crash. Her daughter's friend was on the flight and survived."

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"My children saw the scenes on TV and asked questions. My oldest seemed the most concerned. He wants to be a pilot someday and I believe he understood the responsibility he would be undertaking."

"I spoke with a couple of the guard members from Sioux City who had helped following the crash. I told them that we were hearing what a great job they were doing and that I felt bad for them and that we were all thinking and praying for them."

**AT THIS TIME, DO YOU EVER THINK ABOUT THE DISASTER OR ITS VICTIMS?**

"I think about the firefighters and how they are handling it."

"Occasionally I think about the disaster if reminded of it."

"Occasionally the disaster crosses my mind when I see a plane or something similar."

"I can picture the airplane turning end over end in my mind very easily."

"They said on the news some of the people were decapitated. I think about that sometimes."

"Every once in a while the crash comes over the news."

"I think about the disaster so my unit can be prepared."

"Mostly I think of how the families are coping."

"Many times I think of the people who survived and how hard it must be for them. I think about how hard it is to lose someone."

"If someone mentions the crash, I think about what if it would have been here, what would I have done to help."

"I am a DC-10 flight engineer instructor NWA. We have discussed the crash from a training/modification perspective."

"I think about disasters everyday because it's part of my job. Everytime the alarm goes off I don't know if it's a minor mechanical problem or a major disaster."

"The newspaper articles still run stories of survivors. The actual deaths are downplayed and the tragedy is portrayed as a miracle."

"I just read about one of the impending lawsuits and I think about the blood-sucking lawyers making money from the misery of others."

"I feel the media has no soul when it comes to aircraft disasters with large loss of life. The media distorts the tragedy. More US citizens die from auto accidents, heart disease, and alcohol/drug related deaths in one week than airline fatalities all year. It's the shock of abrupt loss of life to so many that sells - so that's what TV, newspaper and radio throw at you. It pisses me off at this action, this *scam*!!"

**WHAT DO YOU THINK CAUSED THE DC-10 DISASTER?**

"Hydraulic failure of #2 engine caused the plane to crash"

"The engine came apart which caused the crash."

"Failure of the fan section of the #2 engine which severed lines to all 3 hydraulic power control systems. That's the textbook cause but the real cause is a design that would not allow the survivability of at least one system."

"A worn-out engine caused the disaster. Anything man-made can fail."

"The disaster was caused by loss of control function resulting from engine explosion."

"Design flaw in the engine parts caused the disaster."

" There were two causes of the crash: 1) poor workmanship on repairs; and 2) a hurried schedule of flights."

"Irresponsible management within the airline was responsible for the crash."

"Greed for money is the root of the problem. The airline industry doesn't care for people, just how many they can sell tickets to. They have no maintenance program at all."

"The cause of the disaster is known only to God."

"Fate is responsible for the crash."

"It was meant to be."

"I don't know what caused the crash, I wasn't there."

"I'm not qualified to answer this question."

**DO YOU FEEL THAT ANYTHING POSITIVE HAS COME OUT OF YOUR EXPERIENCE WITH THE DISASTER?**

**YES:**

"The management of the ANG and the Sioux Falls Fire Departments are taking a long look at our crash/rescue to see what should be updated."

"Belief that Sioux City ANG and emergency personnel were very effective in minimizing loss of life."

"Sioux City did an excellent job and have received a great deal of respect."

"So many people survived. There is always hope!"

"By the aircrew surviving they have gained valuable information they couldn't have if the crew had been killed."

"The pilot is an outstanding example of people doing what they have to do under tough circumstances when there are no 'by-the-book' solutions available."



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"I believe I would be calm now if it happened here. I know what to expect."

"The disaster made me more aware that it could possibly happen here or near here and plans to handle the situation should be updated."

"I accept the fact that it could happen at our airfield."

"The crash reaffirms my schooling and thoughts that there is no substitute for paying attention to detail when working on aircraft."

"I am more safe in my work practices in the private sector of aircraft maintenance."

"The disaster helped me decide to enroll in an EMT course."

"I have had the opportunity to talk to family and co-workers about the merits of air travel and seat belts."

"Maybe a future crash can be prevented by examinations of all engines in DC-10's."

"The DC-10 will be safer yet with recommended changes put in the aircraft. The safety process is proven over time. Understand that this is the first time this failure has occurred in DC-10's after millions of flight hours."

"It might cause someone to think next time."

"The disaster brought unity to a community."

"I am spending much more time with my wife."

"The disaster reminded me that me or someone I care about can be gone that quick. It helps me to make the most out of life."

"It renews my faith in God when I see how people (perfect strangers) band together in times of crisis."

"I saw first hand an outpouring of love and emotion from people I never thought possible."

"I will never fly."

"Something good comes out of everything. What? I'm not sure. Maybe better built planes."

"I don't know, it's as good as it is bad. It put the midwest in the news, gave us recognition, but that's a hell of a way to get recognition."

**NO:**

"Everything is the same as before."

"I can't imagine a single positive feeling about this."

"It's hard to see anything positive in a tragedy of this matter."

"There have been many crashes in the news lately. Maybe I'll consider more land travel."

"People got hurt but planes are still crashing, it didn't stop anything."

"I wasn't involved with the crash."

**IF YOU HAVE ANY ADDITIONAL COMMENTS ABOUT YOUR REACTIONS TO THE DISASTER OR THOUGHTS YOU WOULD LIKE TO OFFER, PLEASE USE THE BACK OF THIS PAGE.**

"It is possible to live through a plane crash."

"I still travel by air, however I am becoming concerned with our aging airplanes. Airlines are trying to cut costs and I'll admit that I fly with whoever can give me the best rate, however we need newer planes and better maintenance."

"I felt selfish about being glad the accident did not happen here. I know we all would have been in the thick of the rescue effort. It's just so much easier to deal with on TV and in the newspapers than to have to go out and pick up the pieces of airplane and humanity. Filling out this survey makes me think I more or less detached myself from the accident from an emotional point of view, however, as I look back on it my mind plays the crash scene from TV footage very clearly. Maybe because it was so close to home, or just maybe it's the most vivid crash footage of an airliner I've seen. I don't know for sure."

"After I viewed the tape of the crash, I was amazed to hear of survivors. I do find it distressing for our networks to play film footage over and over. Our sons are 10 and 8 and expressed fear that Mom and Dad may not come home sometime. We talked it out and I hope I have made them understand that disasters don't happen every day."

"The whole thing about the crash was our local TV stations. I know for a fact that they talked every night for a week, maybe about 2 weeks. People get tired of hearing about it (like gossip). We all feel sorry for the victims and families so why don't they just let it rest."

"Human beings are so inconsiderate these days. I don't think I would have had the patience to put up with people that did not belong there. I cannot tolerate how people seem to enjoy the misfortune of others."

"I would recommend that the news media be banned from a disaster site."

"I felt very close to being involved in the crash since my coworkers and I were at the Sioux City Guard base the day of the crash. In a way I wish we would have witnessed it. I'm not sure if it's because of a desire on my part to have been able to help or just a morbid sense of curiosity. Since I started working with airplanes I have dreamed of plane crashes on several occasions. They are not alarming dreams or what I would call nightmares. I don't feel a high level of stress from the Sioux City crash because I feel these things are inevitable."

"As a former hospital chaplain there was a part of me that wanted to go to Sioux City and be with the ANG personnel there. I know my commander would have let me use some AT days to do that. Unfortunately, my schedule would not allow me to do that. What I did do was visit the chaplain at the Sioux City unit three weeks later. We walked around the base together as he told me his story of seeing the plane fly overhead and running to the base after the crash (the police would not allow him to

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drive his car on base). We stood in the empty hanger which had been set up as the morgue then and he told the stories of what happened there to him and others in the aftermath of picking up the pieces."

"I think that being so close to such a disaster could really make a person wonder just what life was all about - and I pray to God that something like this never happens in Sioux Falls. It is a very scary thought and the Sioux City disaster made it very very real."

"More people are killed annually in traffic accidents than airplane accidents. My conception was decided by fate - my death was decided at the same time. I could do nothing to stall my conception and birth. My death will happen when it is time."

"The fact that people die abruptly and catastrophically in aircraft crashes is indeed unfortunate, sad, and somewhat humbling. Anyone who flies (and is sane) gives thought that indeed it could be them. But death comes just as abruptly and terribly in many other ways in this society. Automobile mishaps, violent crimes, preventable health disorders leading to death in all forms take a far greater toll of sudden death than air craft mishaps, particularly commercial aviation mishaps not resulting from terrorist activity. It unfortunately is the media that blasts aviation mishaps into every home, blowing the proportionality of mass death out of logical perspective. But as numbers of bodies increase, the US public pleads indifference. High numbers numb the public consciousness - I've gone out and picked up pilot's remains (my friends) I know that every life lost, one or hundreds at a time is completely tragic in itself. We all must allow the process for safety investigation to proceed unimpeded by media hype. We must allow the grief to pass in a family's privacy, and know that yes, it could be me, but odds are there are other events in life with a much greater fatality potential that society is blind toward.

**SIoux CITY AIR CRASH:  
SIoux FALLS SPOUSES AND SIGNIFICANT OTHERS**

**SIOUX CITY CRASH****SIOUX FALLS AIR NATIONAL GUARD SPOUSE/SIGNIFICANT OTHER***Summary of Response Frequencies*

Surveys were completed by 254 individuals. Ninety-two percent (92%) of the surveys were completed between 13 September and 30 September 1989, approximately 2 months after the Sioux City Air Crash. The respondents were 94% female and 99% white. The median age of the respondents was 36, with a range from 18 to 63; 81% were married. The education level was very high; 97% graduated from high school and 68% reported at least some college. For 96%, this was their first encounter with a disaster.

**The Experience of the Disaster**

- \* Sixty-eight percent (68%) still think about the disaster. 32% talked with their spouse about the air crash during the week following its occurrence. Nine percent (9%) talked about it with their coworkers during the same time period.
- \* Fifty-six percent (56%) feel that something positive came from the air crash.
- \* Forty-five percent (45%) experienced "moderate" to "a great deal" of stress following the disaster. 33% supported others who were upset.
- \* Thirty-one percent (31%) felt "moderately" to "very tired" the day after the crash, although eighty-eight percent (88%) of these respondents returned to "normal pace" in 3-4 days.
- \* Twenty-one percent (21%) felt "very much" that "it could have been me" when thinking about the victims of the air crash.
- \* Twenty-one percent (21%) reported that their family was "very supportive" following the air crash. Thirteen percent (13%) said their friends were "very supportive" and 7% said their coworkers were "very supportive".

Respondents were asked to think back to the week of the disaster, and reported that the following reactions occurred "often":

- \* Talking with their spouse/significant other about the accident. (47%)
- \* Having thoughts of the accident and its victims. (42%)
- \* Spouse/significant other talked to them about the air crash. (32%)
- \* Having waves of strong feelings about the crash. (14%)
- \* Spent extra time with their spouses and children. (12%)
- \* Feeling very tired. (10%)
- \* Pictures of the crash popped into their minds. (10%)

## *Disaster Work: Trauma and Social Support*

A wide range of symptoms was reported after the disaster. We report those symptoms that were rated "moderately", "quite a bit" or "extremely" by at least 20% of the respondents. The symptoms and the percentage of the population reporting this level of distress are listed below:

- \* Worrying too much about things. (48%)
- \* Headaches. (37%)
- \* Feeling critical of others. (32%)
- \* Feeling low in energy or slowed down. (30%)
- \* Worried about sloppiness or carelessness. (27%)
- \* Feeling easily annoyed or irritated. (35%)
- \* Pains in lower back. (24%)
- \* Feeling blocked in getting things done. (23%)
- \* Repeated unpleasant thoughts that would not leave their minds. (22%)
- \* Nervousness or shakiness inside. (21%)
- \* Loss of sexual interest or pleasure. (20%)
- \* Feelings being easily hurt (24%)
- \* Feeling others did not understand them or were unsympathetic. (21%)
- \* Feeling tense or keyed up. (26%)
- \* Overeating. (24%)
- \* Others not giving them proper credit for their achievements. (22%)
- \* Feeling easily tired. (22%)

### *Summary of Written Comments*

#### **HAVE YOU EVER BEEN IN A MASS CASUALTY DISASTER EVENT BEFORE?**

"I was in the 1972 flood in Rapid City, SD. I was trapped away from home during the flood. My immediate family all survived with no major loss of property. Many family, friends, and acquaintances died and/or lost all property. For several weeks after flood I assisted with some relief efforts and clean up."

"I was in tornadoes in Iowa - victim both times."

"I watched an aircraft crash and burn, there were 10 occupants. I was the 1st at the scene. I tried to get into the aircraft but was pulled away by others that arrived. I used a fire bottle to fight the fire in vain."

**HOW DID YOU FIRST LEARN OF THE SIOUX CITY, IA DC-10 CRASH? WHAT WAS YOUR REACTION?**

"I heard about the crash on a news broadcast. My first reaction was shock. It was hard for me to believe there was an air disaster of that magnitude at one of our local airports."

"I learned of the disaster on the news. I thought how awful it was. How could anyone survive."

"I heard about the disaster on the radio at work. I was shocked and worried that I may have known someone involved."

"I was saddened, but isn't everything on the news sad these days?"

"I was shocked and horrified."

"Because I'm an RN I anticipated having casualties flown to our hospital and the possibility of being called in to care for some of them."

**DESCRIBE YOUR ACTIVITIES DURING THE FIRST HOURS AFTER THE CRASH. WHAT WERE YOU THINKING AND FEELING AT THE TIME?**

"I found out about the crash on my way home from work, therefore, my next several hours were spent preparing dinner, interacting with my family and listening to news updates about the crash. At that time I was very sad and still shocked. I also felt relieved that the crash was in Sioux City and not Sioux Falls. Therefore, my family and friends were not directly involved."

"I was emotionally upset - with joy and relief for those that made it, and heartsick for the families with a major loss."

"My husband received a call to go to Sioux City immediately with supplies. Of course I was concerned how this would affect him."

"I thought of the families involved and those who knew a friend or family member who was on the flight. I watched it over and over again on TV and listened for the updates."

"I spent the first hours after the crash wondering if my sister from Arizona was on that flight. As she flew on a flight that day from Denver to Chicago - I tried to find out but got no answer until late that night."

**WHAT, IF ANYTHING, HELPED YOU HANDLE THE STRESS OF THE DISASTER?**

"The good media coverage helped me handle the stress of the disaster."

"The fact that there were some survivors helped me handle the stress."

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"God helped me a lot - He comforted me"

"Discussing my feelings with my husband helped."

"Keeping in mind that all that was possible was being done for the families in need helped me cope with the stress."

"Being aware of what was happening and staying informed in all areas - helped ease the stress."

"Knowing that the people from our area really come together when others are in need, regardless of what they have to do helped me cope with the stress."

"Tragedies are a part of our existence so we can't be totally surprised when they happen. Also, we were quite a distance from the crash and didn't know anyone involved."

"Nothing helped me handle the stress of the disaster."

**AT THE TIME OF THE DISASTER AND THE WEEK THAT FOLLOWED WAS ANYONE YOU KNOW UPSET BY THE DISASTER? IF YES, DID YOU PROVIDE SUPPORT TO ANYONE WHO WAS UPSET?**

"I talked it through and gave moral and emotional support."

"My wife was flying back from vacation on the same carrier."

"My friend was flying to Chicago a few days later. I tried to reassure her. I took her to the airport."

"Our oldest son was especially upset, as he travels so much with his job. Just talking seemed to help a lot."

"Several co-workers volunteered to work at the Sioux City hospital where the victims were patients. On return they needed to verbalize their reactions."

"My nephew from California was visiting us and was due to return home on July 27 ( he is 9 yrs old, severely hearing impaired, hyperactive and this is the first time away from his mom). His mom went crazy, calling continuously. She was very worried about his return trip. I had to reassure her that he would be safe."

**AT THIS TIME, DO YOU EVER THINK ABOUT THE DISASTER OR ITS VICTIMS?**

"Generally I think about the disaster when something appears in the paper or is mentioned on the air about it. Otherwise I don't really think about it."

"I wonder if the survivors have flown since the crash. I also wonder if their lives are back to normal."

"Once in awhile I think about the disaster. You never forget completely."

"I don't believe you ever forget something like this. You'd like to know how the survivors are today."



"When friends or family fly I think about the disaster."

"They still have news clips on TV and articles in the newspaper about it which remind me."

"I think about what I would have done if it had happened in the Sioux Falls area. Also, when I take my next flight, it could happen again."

"It was too close to home. I think about the fact that the plane could have easily landed at the Sioux Falls airport."

"I wonder how I would respond in that situation."

"When somebody brings up the crash in conversation I think about it. I often wonder how many attorneys will get rich off the airlines."

**WHAT DO YOU THINK CAUSED THE DC-10 DISASTER?**

"Mechanical failure caused the crash."

"Engine failure caused the disaster."

"The crash was caused by a malfunction in engine #2 that exploded and as a result severed the hydraulic lines, rendering the airplane unflyable."

"Need for more thorough inspections and more rigid rules was the cause of the disaster."

"Old airplanes and poor maintenance were what lead to the disaster."

"Negligence was the cause of the disaster."

"The airlines are so pressed for time schedules that sometimes the planes aren't checked appropriately."

"Maybe a bird caught the engine at the exact rotation which caused just enough stress on it to blow."

"I don't know what caused the crash."

"Qualified people will take care of that."

**DO YOU FEEL THAT ANYTHING POSITIVE HAS COME OUT OF YOUR EXPERIENCE WITH THE DISASTER?**

**YES:**

"It makes you appreciate the help available and be thankful for those willing to spend the hours helping."

"The heroic measures of all the people reassures me how good people are when adversity strikes."

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"I feel so much admiration for the crew of the DC-10. I also admire the passengers who helped rescue other passengers, and also the Sioux City people on the ground who did so much."

"I feel it has made the community aware that it could happen here. I wonder whether we would do as well as the people in Sioux City."

"The pulling together of a community is positive. Help is there when a situation calls for it."

"The airlines must have more stringent inspections, etc. The disaster gave the people involved experience and confidence that they are well trained and able to help in disasters."

"I think the airlines will be more careful about checking out equipment."

"DC-10's should not be used for commercial flights. Hopefully they are being investigated."

"I now realize everyone doesn't have to die in a crash."

"It just goes to show that you never know for sure what your future will bring."

"I have started taking a greater interest in perfecting my emergency medical skills. I've also discussed disaster plans at the hospital where I work."

"The disaster highlighted the need for the pilots to know what to do if the same situation should arise."

**NO:**

"Since I had no direct contact with the disaster my only experience is my sadness and sympathy for the victims and their families."

"The disaster doesn't seem to really concern me or my family."

"Nothing positive comes out of people dying unnecessarily."

"I feel that the plane was too old."

**DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT YOUR REACTIONS TO THE DISASTER OR THOUGHTS YOU WOULD LIKE TO OFFER?**

"One of the things I remember my husband saying about the Sioux City guardsmen was that they felt hurt that the news media did not acknowledge all the help the Air National Guard gave to the plane crash. He also said that one of the men that holds the same job in Sioux City helped in the morgue and is still having some problems handling it."

"I'm a very high-strung person to begin with. We have had many things going on with our 3 children (ages 29, 27 and 21) in the past week. As I stated earlier, I don't like to travel at all! I never have flown in a plane and never plan to. I don't even like taking trips in a car. My family gets fed up with me being so nervous whenever someone travels. I'm very upset with all the DC-10 problems lately, especially since our oldest son flies on them so often. The Sioux City crash was very close to home and upset me very much, in more ways than one."

"I feel that the children were more devastated by the news media coverage than was necessary - mostly because they don't understand the meaning of our life cycle; birth, life, and death."

"Most of my feelings about the crash were of honor, sympathy, and anger. The anger was directed at the airlines (big business) in general. I don't believe there can be too many inspections or too much time taken when caring for commercial carriers of any kind. They are also not paying the workers enough and are working them too hard. Workers tend to "slack off" when they don't feel appreciated. The argument against this is that the prices would be too high. I don't believe it. Someone somewhere would just maybe have to drive their own Mercedes instead of being chauffeured in a limo. I also felt a little guilt after the crash. The trip we took was at first only going to be for my spouse. I had just called for plane reservations Tuesday. The ticket agent and I were joking and I asked her if we got our money back if the engine fell off. There was a possibility of my having to come home alone from the trip and I thought to myself that there was no way I would get on a plane even if I lost my job because I was late getting back."

"I was upset that the officials wouldn't give any information at first so the news reporters dug up what happened. Like the matter of possibly landing on a rural highway - California heard that before we did. It makes me wonder if there's more they're covering up. It's an unfortunate tragedy. The people knew when they got on the plane that accidents happen, so I hope there won't be lawsuits. I wouldn't sue. It seems like the airlines didn't have any idea something like this could happen and you can only predict so far into the future. I liked it when the airlines flew the family members to Sioux City. That means a great deal, even if they 'couldn't do much'. As my spouse is in the Guards, I wonder if the Air Guard would fly me out to the scene if something happened. I hope so. Just being there releases some of the fears."

## **USS IOWA DISASTER**

## SUMMARY

An explosion which killed 37 sailors occurred aboard the USS Iowa on 19 April 1989. During and after this disaster, many individuals aboard the Iowa were directly exposed to the trauma of the explosion: the fear of the ship sinking, fighting the fire that occurred, removing their dead shipmates, cleaning up the turret in which the explosion occurred, and the anticipation of the response of their families, the Norfolk community, and the nation upon their return to port. In an attempt to understand the reactions of the crew of the USS Iowa to this tragedy, a survey was completed by a random sample of the ship's crew approximately 16 months after the explosion.

In order to provide comparison data on the reactions to the disaster aboard the USS Iowa, two comparison groups were surveyed. The first group was made up of those sailors who were aboard the USS Iowa at the time of the survey, but had not been on board at the time of the disaster. This group is called the Iowa non-disaster group. The second comparison group was sent to the crew of another battleship, the USS Wisconsin. They were surveyed at the same time as the crew of the USS Iowa survey. This group is called the Wisconsin non-disaster group.

The reactions of individuals to a disaster such as this one are complex. Some initial findings are presented here. These findings are preliminary and are subject to change upon review of additional surveys and more complex analyses of the data. Nevertheless, the responses tabulated here do show some patterns worthy of consideration.

A total of 1410 surveys were received: 527 surveys were from the crew of the USS Iowa who were assigned at the time of the explosion, 420 from those who were not assigned at the time and 463 were received from USS Wisconsin crew members. We do not have an exact percentage of return rate, but we believe it is high, approximately 80 percent of those requested to complete the survey.

### Demographics

The respondents were highly similar in terms of demographics. Since the two ships are combat vessels, all were male, 68-78% were white, 95-98% were enlisted, largely between the ranks E2-E4. The median age was 22-24 years. Over 95% had graduated from high school and 48-58% were single. For over 90%, this was their first encounter with a disaster.

### Questionnaire

For those aboard the Iowa at the time of the explosion, over 50% had lost a friend and over 75% had lost someone they knew in the explosion. Over 50% worked with the dead directly, indicating the scope of direct involvement with the dead shipmates, and 35% reported feeling in danger themselves. Over 50% felt that "it could have been me" in turret #2, the gun turret which suffered the explosion. Over 50% participated in some sort of debriefing following the explosion. Eighty-three percent (83%) still thought about the disaster at the time of the survey, one year later. Twenty-eight percent (28%) reported feeling "very tired" the day after the explosion. It took them much longer to resume their normal pace of work than the other groups.

For the crews not aboard the Iowa at the time of the explosion, 3-5% had lost a friend and 5-10% had lost someone they knew in the explosion. Of those assigned to the Wisconsin, 40% reported that they had experienced either "moderate" or "a great deal" of stress following the explosion and 65% still think about the disaster. For the Iowa crew members who were not on board at the time of the explosion, only 18% felt "a great deal of

stress." For those aboard the Wisconsin, 58% felt "it could have been me" in the explosion, whereas only 8% of the non-disaster Iowa crew reported that response. Only 5% of the Wisconsin crew and 0.2% for the Iowa non-disaster crew reported fatigue on the following day. A similar percentage for both groups, about 35%, felt something positive had come out of the disaster. Between 65-68% of the two comparison groups still think about the disaster compared with 83% for those on board the Iowa during the explosion.

We asked respondents to look back at themselves and respond to a range of symptoms during two time periods: (1) during the week after the disaster and (2) during the week preceding the questionnaire. In the questionnaire, respondents were asked whether the symptoms listed bothered them and at what level (on a scale of 0-4, "a little" to "extremely"). We report the most significant symptoms, those which 20% or more of the respondents answered 3 or 4 on the 0-4 scale. Because there are three groups to compare, the results reported are complex.

A wide range of symptoms was reported after the disaster. The Iowa disaster group had 17 items which were endorsed by 20% or more; the Iowa non-disaster and the Wisconsin non-disaster groups both had nine symptoms which 20% or more reported feeling. The nine items answered for the Iowa and Wisconsin non-disaster crews were identical except for one item yielding a total of 10 items between the two groups. These items had to do with feeling tired, and thinking about and talking about the explosion. For the Iowa disaster crew, eight of these ten items were also answered. In addition, the Iowa crew reported items indicating that they tried to avoid talking or thinking about the explosion and had sleep disturbances.

There was a marked difference in support reported by the respondents. For the Iowa crew following the disaster compared to the crews that were not aboard either of the ships at that time, 82% reported their family, 70% of their friends, and 60% of their shipmates as "very supportive." Following the explosion, for the crews not aboard at the time, the percentage of family listed as "very supportive" was 14-27%, 17-40% of friends, and 18-38% of shipmates.

The survey included a question on whether the respondent would work on a battleship or in a turret again. In all cases, the number who would volunteer for duty on a battleship was greater than the number who would work in a turret. The responses of the Iowa crew members on board at the time of the accident and those who joined the crew later were similar: 66-70% said they would work aboard a battleship; 40-50% would work in the turret. For the Wisconsin crew, only 45% would work on a battleship again and only 27% would volunteer to work in a turret.

For the set of symptoms reported the week before the survey, the Wisconsin non-disaster crew had the highest number of symptoms reported at the 20% level or higher, 36. The Iowa disaster group was intermediate with 28 symptoms and the Iowa non-disaster crew had the fewest number of symptoms reported (11). The Wisconsin crew was the highest (36). The 11 symptoms reported by the Iowa non-disaster crew were included in the responses of the Iowa disaster crew and the Wisconsin non-disaster crew. These symptoms were feelings of being tense, not getting credit for achievement, feeling taken advantage of, fatigue, and worry. The additional 17 symptoms reported by the Iowa non-disaster crew were feelings of restlessness, loneliness, feeling overly sensitive, trouble concentrating, fatigue, sleep disturbance, anger, and alienation. The symptoms for the Wisconsin non-disaster crew included, in addition to those already noted, more indications of problems controlling temper outbursts, feeling that people did not understand them, feeling hopeless about the future, thoughts about death and dying, and drinking more alcohol.

*Written Comments*

Written comments were solicited from the respondents. A slightly different survey was given to the Iowa disaster crew than was given to the crews of the Iowa and Wisconsin who were not present or assigned to the ship at the time of the explosion. The Iowa disaster crew was asked to provide answers about their initial reaction to the disaster, what they did and thought immediately after the disaster, whether they considered themselves to be in danger, whether they had re-entered turret #2 since the explosion and their reactions to that experience, whether they had lost friends or acquaintances or worked with any of the bodies of the dead, what problems they encountered, any problems in their disaster work, how they handled the stress of the casualty, their feelings about the families of the dead, their feelings about their arrival at port, and the news that they would soon deploy again.

The initial reaction to the casualty included shock, disbelief, and fear for the ship, for ship mates and for self. In the hours following the explosion, people reported being very busy fighting the fire, helping with the bodies, continued fear and confusion, helping wherever necessary, and feeling helpless. People felt they were in danger from the ship sinking or from being hurt in another explosion. Within one week following the casualty, 50% of the crew had gone back into turret #2. People reported their experience as "feeling sick," "eerie", "angry", "sad", and "morbid, like entering a tomb." They experienced chills, smelled burned flesh, saw red liquid remaining in parts of the turret, and walls covered with black soot. People were required to carry bodies and body bags, stretchers, and pick up body parts. Some described feeling too sad to be able to do anything. Others reported how difficult it had been to "smell the horrendous odor," and to remove bloody water. Some described their own feelings such as being sick, scared, shaken up, fearing their own death, and missing their families. Some described some difficult choices they had to make on that day. Many feared seeing their friends' bodies and elected not to help. Others made the hard choice to participate. People described their feelings of offense at seeing the bodies stacked in bags and their difficulty seeing a bag of personal effects, such as wedding rings, which had been retrieved from the bodies.

People reported handling the stress of the casualty in a variety of ways. Among these means were talking to shipmates, prayer, shutting down their emotions until later, trying to set good examples for others, being with family and friends, and writing letters.

Many people described the support they provided to others, from the ship's captain to shipmates. They described talking in small groups trying to understand what had happened to the ship and to each other.

Upon returning to port, many described feeling mixed emotions: proud, emotionally exhausted, sad for the families of the dead and the atmosphere surrounding the explosion, glad to see families, and nervous about the press and Navy investigations.

The re-deployment was also seen with mixed feelings: some were shocked that sailors were required to return to sea duty so quickly; others thought that this was exactly the right move for the ship and its crew.

Many of the survivors of the explosion had later contact with the families of the dead, such as talking to them at memorial services and describing the events of the explosion. They described how hard it was because of their inability to do anything to make the families feel better or change what had happened.

As noted earlier, a large percentage still think about the disaster, 83%. Some reported continued bad dreams when reminded by the media and from being on board the ship, or when someone asks what ship a sailor is from.

As noted, different questions were asked of the groups that had not been aboard the Iowa at the time of the explosion. They were asked for their initial reaction and what they did in the hours after hearing the news of the disaster. Those who were to be assigned to the USS Iowa were asked for their reactions upon learning of that assignment, whether they provided support to anyone who was upset by the disaster, whether they ever think about the disaster or its victims, and whether they thought anything positive had come out of the casualty.

All the groups were asked if they thought anything positive had come out of the casualty. Responses were remarkably similar whether a man had been on board the Iowa during the explosion or not. A minority of respondents, 35-38%, thought that something positive had indeed occurred as a result of the casualty. The majority thought the answer was "no," 62-65%. Those who had been aboard the ship during the disaster and thought that something positive had come out of the casualty reported that this type of duty was inherently dangerous, that the ship's crew had done a good job, that the disaster had made the crew closer; they knew that they could deal with a disaster in a positive, supportive manner. For the majority of the respondents, nothing positive had occurred. They reported feeling the ship had been victimized by the press, that the investigation was poorly done, that the Navy had tried to blame one person, and that the accident should not have happened in the first place.

Initial reactions to hearing the news of those who were not yet on the Iowa consisted of shock, disbelief, sadness for the men and their families, wanting to do something to help, as well as those who reported no feelings and a lack of personal involvement. For the Wisconsin non-disaster group, in addition to the above, people reported feeling fearful that the same thing would happen to their ship, wondering how it could have happened, and thinking "there but for the grace of God go I."

Those who had been assigned to the USS Iowa, but were not aboard during the explosion reported that when they got the news of their assignment they felt proud, scared, excited, pleased. They also described family problems secondary to fear for their safety.

Support provided was similar for the two groups. Many reported providing support to family members who were apprehensive. Others provided support to sailors who had been on the Iowa.

The question of whether or not the respondent thinks about the disaster today was answered similarly by both those who were on board at the time of the disaster and those who were not, with the exception that those aboard the Iowa are presented with more reminders of the tragedy than are those aboard the Wisconsin. People still wonder how it happened, and are glad that it did not happen to them. When the turrets are entered or guns are fired, they wonder what that day was like.

Those crew members who responded positively, but had not been on board during the explosion reported that they thought safety had been improved, that people can deal with fear and grief and move on, that the Navy had learned valuable lessons, and that the crew had been made closer (including the men who had not been on board at the time). Others thought that something positive had been done by showing the public how dangerous battleships are and that they would all be decommissioned as a result of the Iowa explosion.

Those who said "no" reported that the guns were too old and unsafe, that the Navy investigations did not prove anything, that a sailor had been made a scapegoat, and that nothing positive could come from the loss of 47 lives.



## INTRODUCTION

On April 19, 1989, north of Puerto Rico, on board the USS Iowa, gun turret number 2 exploded killing 47 of the 1500 sailors on board. Death and destruction occurred quickly, but the legal and emotional battles over how and why this tragedy happened were long and drawn out. The gun crews carry out their work surrounded by 17 inches of steel. The steel encasing intensified the explosion. Accidents in gun turrets are historically common, but rare in modern warships such as the Iowa. Originally commissioned in 1943, the USS Iowa was modernized and re-commissioned in 1984 during President Reagan's build-up of the armed forces. Following the explosion, there was much legal and editorial comment concerning the responsibility for the tragedy. The ongoing debate about the cause and, in particular, the implications of wrongdoing by fellow sailors and/or the USS Iowa's leadership create a climate in which the disaster of the USS Iowa has persisted long beyond the day of the explosion.

The bodies of those sailors who were killed in the USS Iowa explosion were taken to Dover Air Force Base for identification. The Uniformed Services University of the Health Sciences/Walter Reed Army Institutes of Research (USUHS/WRAIR) trauma research team went to Dover and initiated on-site participant observation studies at the mortuary. They also conducted debriefing sessions two weeks later for the Dover workers who had volunteered to identify and process the bodies.

One year after the USS Iowa explosion, the USUHS/WRAIR trauma team initiated a survey study of the sailors aboard the Iowa at the time of the disaster, as well as a control study of those aboard the USS Wisconsin during the same time period.

Approximately 1146 surveys were distributed to the Iowa crew members, and 947 (83%) responded. The respondents from the USS Iowa were divided into two groups for the study: those who had been aboard the ship at the time of the explosion and those who joined the crew afterwards. These groups are referred to as the disaster group and the non-disaster group, respectively. The disaster group was comprised of 527 of the total USS Iowa respondents (56%), and the remaining 420 (44%) made up the non-disaster group. The USS Wisconsin sailors were divided into similar groups. Approximately 632 surveys were distributed aboard the Wisconsin, and 463 (73%) responded. A small number of men from the USS Wisconsin had been aboard the USS Iowa at the time of the explosion (N=19), and this group was the Wisconsin disaster group. All of the other Wisconsin crew members (96%) were part of the Wisconsin non-disaster group.

**USS IOWA DISASTER:  
USS IOWA PERSONNEL-DISASTER GROUP**

## USS IOWA DISASTER GROUP

### *Summary of Response Frequencies*

Surveys were completed by 527 individuals, a 79% response rate. Ninety-one percent (91%) of the surveys were completed between 1 August and 3 August 1990, approximately 16 months after the USS Iowa explosion. For 91.4%, this was their first encounter with a disaster. Fifty-five percent (55%) reported being within 100 feet of the explosion when it occurred. The respondents were 100% male, 96.7% enlisted, 70.3% white, and all had joined the crew of the USS Iowa before the explosion occurred. The median age of the respondents was 23, with a range from 19 to 52. Forty-eight percent (48%) were single. Occupations of these individuals were varied, from gunner's mate to radioman to boiler tech, but no single occupation was named by more than 10% of the respondents. The education level was high; 96% graduated from high school and 31.3% reporting at least some college.

### **The Experience of the Disaster**

- \* Ninety-three percent (93%) of those who responded to the survey were on board at the time of the explosion.
- \* Fifty-seven percent (57%) said that a close friend or friends had been killed in the explosion. Seventy-seven percent (77%) said that at least one of their acquaintances had been killed.
- \* Fifty-two percent (52%) worked with the dead directly.
- \* Thirty-four percent (34%) were directly involved with fighting the fire after the explosion.
- \* Thirty-five percent (35%) reported being in physical danger at the time of the disaster.
- \* Sixty-eight percent (68%) had been inside Turret 2 since the explosion, 50% within a week after the explosion occurred.
- \* Twenty-eight percent (28%) felt "very tired" the day after the explosion, although 50% of these returned to "normal pace" within 3 to 4 days.
- \* Twenty-one percent (21%) experienced "a great deal" of stress following the explosion. Fifty-nine percent (59%) supported others who were upset.
- \* Nineteen percent (19%) encountered problems while assisting during the disaster and 14% made difficult choices during this time.
- \* Twenty-nine percent (29%) had contact with victims' families following the explosion.

### *Disaster Workers: Trauma and Social Support*

- \* Fifty-one percent (51%) felt "very much" that "it could have been me" when thinking about the dead from the explosion.
- \* Fifty-six percent (56%) participated in some form of debriefing following the explosion.
- \* Eighty-two percent (82%) reported that their family was "very supportive" following the explosion. Seventy percent (70%) said their friends were "very supportive" and 60% said their shipmates were "very supportive".
- \* Eighty-three percent (83%) still think about the disaster.
- \* Thirty-five percent (35%) felt that something positive came from the disaster.
- \* Sixty-six percent (66%) said they would volunteer to work on a battleship again, but 60% said they would not volunteer to work in a turret.

Respondents were asked to think back to the week of the disaster, and reported "often" having the following reactions:

- \* Had thoughts of the accident and its victims. (52%)
- \* Spent time with peers and friends. (44%)
- \* Talked with spouse/significant other about explosion. (36%)
- \* Spouse/significant other talked with them about explosion. (33%)
- \* Pictures of it popped into their minds. (33%)
- \* Waves of strong feelings about the explosion. (31%)
- \* Any reminder brought back feelings about the accident. (30%)
- \* Thought about explosion when didn't mean to. (29%)
- \* Felt very tired. (26%)
- \* Tried to remove it from memory. (26%)
- \* Tried not to talk about it. (24%)
- \* Felt lonely or blue. (22%)
- \* Couldn't sleep. (20%)
- \* Felt explosion did not happen or wasn't real. (20%)
- \* Trouble sleeping. (19%)
- \* Dreams about explosion. (19%)
- \* Feelings were numb. (18%)

A wide range of symptoms was reported after the disaster. We report those symptoms that were rated "moderately", "quite a bit" or "extremely" by at least 20% of the respondents. The symptoms and the percentage of the population reporting this level of distress are listed below.

- \* Felt easily annoyed or irritated. (42%)
- \* Felt people will take advantage of you if you let them. (40%)
- \* Worried too much about things. (39%)
- \* Others not giving you proper credit for their achievements. (37%)
- \* Felt most people cannot be trusted. (34%)
- \* Felt tense or keyed up. (28%)
- \* Felt lonely. (28%)
- \* Had repeated unpleasant thoughts that wouldn't leave your mind. (27%)
- \* Felt low in energy or slowed down. (27%)
- \* Felt lonely even when with people. (27%)
- \* Sleep that was restless or disturbed. (26%)
- \* Felt blocked in getting things done. (26%)
- \* Less interest in activities once important to you. (25%)
- \* Felt blue. (24%)
- \* Felt others do not understand you or are unsympathetic. (24%)
- \* Got into frequent arguments. (24%)
- \* Had to check and double-check what you did. (23%)
- \* Trouble concentrating. (23%)
- \* Trouble remembering things. (22%)
- \* Temper outbursts you could not control. (22%)
- \* Felt no interest in things. (22%)
- \* Feelings were easily hurt. (22%)
- \* Trouble falling asleep. (22%)

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- \* Felt so restless you couldn't sit still. (22%)
- \* Felt easily tired. (22%)
- \* Felt less happy or pleased about things which that once caused you to be happy and pleased. (21%)
- \* Felt detached or estranged from others. (20%)
- \* Felt less upset or angry about things which once caused you to be upset and angry. (20%)

### *Summary of Written Comments*

Respondents were asked several open-ended questions regarding their response to the explosion and their activities at that time and since then. The following is a sample of written comments in response to these questions.

#### **WHAT WAS YOUR INITIAL REACTION?**

"My initial reaction was shock."

"I heard an explosion louder than a gun and knew something was wrong. Then we found out what had happened. The first body I saw was a guy in a bag being given last rites and I thought it couldn't be happening."

"I thought the ship was hit by a missile. I was scared. I was thinking about my parents and family at home. The first body I saw looked like a mannequin, it didn't look real. The other bodies I saw made me feel numb and empty on the inside."

"Was everybody really dead?"

"My first reaction was to try to save as many shipmates as I could."

"The first 3 bodies that were brought out looked (in parts) like they had been melted and all the clothing had been blown off."

"Something as tragic as this could not possibly be happening to me."

"I was scared."

"My reaction was extreme fear. My fear only got worse as the damage and fires were reported over the ship's circuits, and people began evacuating into our area. Also I had to calm down the gun crews who were in sight of the turret, as smoke poured into their ammo rooms."

"My initial reaction was to run, but where to?"

"What scared me the most was seeing dead bodies of guys I know."

"Sadness was my initial reaction."

"I didn't feel sorry or bad about my shipmates at the time of this disaster, but I did after it was all over."

"I thought of the possibility of not being with my family again."

"I was hoping there were survivors."

"My initial reaction was to do the job I'd been trained to do."

"My initial reaction was to the smell. I was scared shitless. Then we all joined together and tried to do what had to be done."

"Emotional shutdown was my initial reaction. My only thoughts were of getting to and setting up battle dressing station."

"I wanted to believe that the explosion was just a dream."

"My initial reaction was disbelief. I did not want to believe that what was going on was actually happening. At first we thought there was only one casualty. The smell of charred human flesh and gunpowder will follow me forever."

**DESCRIBE YOUR ACTIVITIES DURING THE FIRST HOURS AFTER THE EXPLOSION.**

"After the explosion, I was confused about how things were going."

"I couldn't believe the turret had really exploded. I wanted to be sick."

"I wondered how many of my friends had been killed?"

"Following the explosion I prayed."

"After the explosion I felt angry."

"I was afraid after the explosion."

"After the explosion I wondered how I was going to survive in all that water?"

"I thought about my family after the explosion."

"I helped put out the fire during the hours after the explosion. I was afraid the ship would be blown in half if the powder caught on fire."

"I methodically went from job to job trying to remain able to continue after the explosion."

"I threw body parts over the side of the ship so that the ship would look good for the press."

"After the explosion I felt helpless because I could not leave my station and get involved to help."

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"I tried to assess the amount of damage and number of casualties by what I heard on a sound-powered phone."

"After I saw two bodies of people I knew, I decided not to pursue the task of removing bodies. I didn't want to remember the people I knew in such a state."

"I went forward and helped remove the bodies after the explosion. The men who were killed were my shipmates. If I had been killed, I would have liked to feel that someone would have done the same for me. I couldn't look at food. The next time I slept was on Thursday. I tried to block out what I had done, but I remembered the explosion like it was yesterday."

"I was scared and nervous after the disaster. I had on an OBA and stood just outside of the turret. I didn't have any experience at fire fighting. I debated whether or not to go in and help. I did not go into the turret, I was too scared. I became a hose man instead."

"I think this was the worst disaster I have ever experienced directly. I was in the Army in Vietnam and even there I never experienced losing 47 men. In fact, I don't think the Army lost that many during the whole Panama invasion."

"The fear eased off after the fires were put out, but I remained pumped up. I remember nearly tearing a first aid box off a wall because I kept fumbling with the latch."

"After the disaster was over, I felt as though I should help with recovery because I wasn't as close to some of the casualties as other members of the crew were. I felt a little helpless after the explosion and was very worried that my friends would think I was dead."

"Once the fire was under control I felt that I was not doing enough to help and went searching for ways to assist. I became the recorder for the casualty recovery and identification team."

"I knew the job had to be done so I put my feelings on hold and did it! Even so, my feelings caught up with me."

"I prepared food after the explosion."

"Following the explosion I helped anywhere I was needed."

"I didn't know what had happened until about 30 or 40 hours later. Therefore, until I was informed of the details of the explosion, I was confused."

**WERE YOU IN ANY PHYSICAL DANGER AT ANY TIME DURING YOUR DISASTER WORK?**

"I was the first stretcher bearer on the scene of the explosion. The ship was under threat of sinking if fire spread to magazines, so everyone on board was in danger."

"I fought the fire during my disaster work. There could have been another explosion and I could have died."



**AFTER THE EXPLOSION DID YOU GO INTO TURRET 2? IF YES, WHAT WERE YOUR EMOTIONAL REACTIONS?**

"After the explosion I went into turret 2. I was sick to my stomach from the smell and my mind went blank. All I could think about was my family and whether something else was going to happen. I felt like crying but couldn't. All of those men who died were my friends. I had talked to some of them earlier that morning."

"I went into turret 2 about a day or two after the explosion to search for remains and personal items of the dead. I found it hard to believe that the chunks of meat and bone were once people and there I was putting them into trash bags."

"Went into turret 2 on Thursday to look around. Earlier that day I helped bail out gun pits. The water in the turret was red. I spent 18 hours Friday picking up body parts and scraping flesh off turret booth walls. I also assisted in de-watering. Bones, flesh, teeth, and body parts were everywhere. A week later, I scrubbed out the powder flats."

"Everything in turret 2 was covered in black soot. The turret looked like the bottom of a barbecue grill after a cookout. I was amazed to see such sturdy material, like bulkheads and doors, twisted up like broken toys. Wondered what was going through the casualties' heads and if they had known what was about to happen to them before the explosion happened."

"On entering turret 2, I experienced chills and a rapid heart rate at the thought that people were killed in there. I thought of how easily it could have been me."

"I saw debris and burnt metal in turret 2. It was dark and I didn't stay long."

"I passed buckets in and out of turret 2. I was surprised at the stuff we were cleaning."

"The destruction I saw in the turret was unreal. I couldn't believe how bad it was."

"I thought I was crazy for going into the turret to fight the fire."

"Entering turret 2 was morbid, like entering a tomb."

"Entering turret 2 was horrifying."

"My reaction to what I saw in turret two was amazement."

"I felt a great sadness when I went into turret 2."

"I reacted with anger to what I saw in turret 2."

"I was scared when I went into the turret after the explosion."

"I had a weird feeling when I first entered turret 2. After a few minutes, I felt sort of claustrophobic so I left."

"I keep experiencing a hollow and empty feeling every time I go back into the turret."

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"I have not been able to go back into the turret since the ship's return to port on 23 April 1989."

"Was forced to go inside turret 2."

"I try to have no emotional feeling in disaster situations. I tried to visualize the explosion when I went into turret 2. I had prior experience as a civilian fireman."

"There was nothing unusual about the turret when I saw it. The turret had been stripped and repainted."

"During the latter half of the six month cruise I chose to face my fear of turrets and guns. I entered the turret through the booth and sat down where one of the seats used to be. It felt eerie in there. I felt as if someone were watching me, even though I was alone. I started shaking violently and crying. After half an hour this subsided. I left the turret and never returned."

**WERE YOU DIRECTLY INVOLVED IN FIGHTING THE FIRE?**

"I was one of the first group of people to go into the turret and combat the fire."

**DID YOU WORK WITH ANY OF THE DEAD FROM THE CASUALTY?**

"I was a stretcher bearer which meant carrying bodies."

"I picked up pieces of the dead men's bodies."

"I carried bodies from the opening of the turret into the wardroom."

"I carried body bags to the flight deck."

"Working with the dead was horrible."

"I swept up body parts and broke the bones in order to move the bodies thru the smaller hatches."

"I was the EM's relief. He showed me the ropes. I saw him after the explosion. He was dead with half of a book in each hand."

"After clearing the reefer, I strung sheets through mess decks so the crew wouldn't have to see their shipmates being carried down in body bags. I helped carry all bodies and separate them into two groups, those who had been identified and those who had not. When light came, I helped carry the bodies to the helicopter."

"I had contact with the dead during the transport of the body bags from the turret. As I carried each bag I wondered if I was carrying someone I knew. It wasn't long before I couldn't handle this task any more. I found a spot on main deck and gazed at the stars until my next watch. On watch I read Psalm 23 and Ecclesiastes from the Bible."

**DID YOU ENCOUNTER ANY PROBLEMS IN DOING YOUR DISASTER ASSISTANCE WORK?**

"I had a problem with carrying body remains away from the center gun room."

"Removing bloody water from the turret was difficult for me."

"The horrendous odor was a problem for me."

"While I helped doing disaster work, I couldn't touch the charred body on deck."

"My best friend had died so I was too sad to do anything."

"I wasn't involved in disaster assistance work, but the clean up and bones stuck to the bulkhead stays in my mind."

"I imagined seeing my body being carried in a body bag from time to time."

"People kept reminding me of what happened when I just wanted to forget the disaster."

"I had a problem with moving the dead bodies because they become stiff and are hard to move through hatches."

"During disaster assistance work, I had problems sleeping. I missed my girlfriend really bad. I wanted a shoulder to cry on."

"During my disaster assistance work, I was shaken up real bad and had to get a grip on myself so I sat at the table down in berthing until I felt better."

"A body bag burst open while I was carrying it."

"I felt sick to my stomach while I helped after the disaster."

"It was hard to keep myself going when my shipmate's blood was leaking onto my uniform as I carried his body bag below decks. I was also angry at the number of crew members who ghoulishly gawked at the deceased."

"While I assisted after the explosion, I discovered that I really am afraid to die. It was harder each time to go into the turret."

"During the bringing down of the bodies, the dental officer that was reading the tags was becoming visibly shaken. I knew he'd been identifying the bodies so I told them to let me take over. This occurred after midnight."

"The bodies looked as if they were alive even though they were dead."

"One thing that upset me was when one of the dead bodies we brought out had only half of his body left and on his left arm was his dungaree shirt melted by the 3rd class chevron."

**DID YOU EXPERIENCE ANY DIFFICULT CHOICES OR DECISIONS IN DOING YOUR DISASTER WORK?**

"I made the decision not to touch the charred body on deck."

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"I had to decide whether or not to locate the bodies of my friends, I chose not to."

"I had to decide whether or not to go down in the turret, to see my friend who had been killed."

"I had to figure out how to move around and transport the dead bodies out of a turret that is 7 decks deep."

"Initially I felt that searching the bodies for personal belongings and looking for clues to identification was a violation of their privacy."

"Choosing to participate was a difficult decision to make. It was the toughest choice I ever made."

"Holding back the urge to punch out the gawkers was a hard choice to make."

"Late in the night when it appeared we might not have enough room for all the bodies the senior dental officer made the statement, 'We could start stacking the bodies like a cord of wood.' I took great offense to this and let him know."

"There were 2 types of bags, one for body parts and one for personal belongings. There was a guy's left hand and it had a wedding ring on it. I couldn't decide whether to leave the ring on his hand or put the ring in the personal belongings bag."

**DID YOU HAVE ANY CONTACT WITH ANY OF THE FAMILIES OF THE VICTIMS?**

"It is hard to get the family members to understand that being on a warship is a risk."

"A family or two came up and asked about their loved one and told me what a good job we're doing for our country."

"At the memorial ceremony a guy's father talked to me and I was pretty sad for him even though I didn't know his son that well."

"I had contact with the families while giving the deceased's personal belongings to their families."

"I met several families of victims at the memorial service."

"I talked to family members about the victim and the work he did on board."

"I paid all the death gratuity pay to the men's families."

"I had regular contact with one family."

"The father of one of the victim's was on the deck while I was on watch and wanted to talk to me and another person so we chatted awhile."

"I stayed at a hotel with one of the deceased's family. They saw my Iowa jacket and asked me about getting one for them. I asked if they had a dependent on board, they replied, 'We did.' I gave them my jacket when the mother started crying hysterically."

"I spent time with a couple of families. We discussed in detail the events of the day, performance of their sons, and I included a Turret 3 tour. I attended one of the victims' funeral."

"I and another E-7 went to a ship mate's funeral in New York. We were asked to fold the flag from the casket and present it to the victim's paraplegic wife. That was the toughest job I can ever remember doing in my entire career."

"One woman came on board to look at the turret that her son was killed in. When she came out she was crying. That made me feel real sad because I could not say anything to change what happened."

"It was hard dealing with the families of the victims. I thought they hated me for being a survivor of the explosion."

**WHAT, IF ANYTHING, HELPED YOU HANDLE THE STRESS OF THE WORK WITH THE CASUALTY AND ITS VICTIMS?**

"Knowing that younger people looked to me for reassurance helped me handle the stress."

"Prior experience with fire and ambulance departments has taught me to block out feelings and just do my job."

"My work load was intense, it delayed and cushioned the emotional impact of the disaster."

"Alcohol helped me deal with the stress."

"My leading petty officers helped me deal with the stress and working around the clock helped to take my mind off the accident."

"It helped that I wasn't close to any of the victims. They were just acquaintances."

"To help deal with the stress I just kept thinking, 'It's only a job, they're not people any more.'"

"I still haven't gotten over the stress. I keep every secret to myself, I try not to show it either."

"To deal with the stress I shut down all of my emotions until the disaster is over and think of better times."

"I have to joke around because that's the only way I can handle the stress from the disaster."

"The SPRINT TEAM helped me deal with the stress."

"Prayer and faith in God helped me handle the stress."

"I have peace of mind knowing those who died are in a much better place now."

"Talking with friends and writing letters to no one helped me handle the stress."

*Disaster Workers: Trauma and Social Support*

"My shipmates helped me get through the stress."

"Being with my family helped me handle the stress."

"Being with friends helped me handle the stress."

"The support of my wife has helped more than anything else to deal with the stress."

"Getting ready for the deployment and crying my eyes out with my wife for an hour before ever leaving the base helped me deal with the stress."

"Attending the memorial service after the disaster and also having to come to work every day after the explosion helped me deal with the stress. Also, my family was very helpful to me in relieving my stress."

"I think the ship pulling together as a team and the captain being strong and confident the whole time helped me handle the experience. Because of that team spirit and the Captain's strength, I didn't really feel that stressed."

"Knowing that everything was getting picked up and cleaned up and put where it was supposed to go helped me handle the stress."

"Nothing helped me deal with the stress. The Navy and this survey made it worse by bringing back my memories of the disaster."

"I overcame any problems because I was strong."

"I didn't feel any stress."

"I still don't know how I got by."

**WERE ANY CLOSE FRIENDS OF YOURS KILLED IN THE EXPLOSION?**

"When someone close to you dies, especially here in the Navy you think about it, but I keep telling myself that they have been transferred. Every once in a while I am reminded of them, but there is nothing I can do about it now."

**WERE ANY OF YOUR SHIPMATES THAT BUNKED WITH YOU KILLED IN THE EXPLOSION?**

"I was mess cooking at the time and the guy who slept across from me died. It was kind of scary to look over and see his empty rack."

**HOW FATIGUED DID YOU FEEL ON THURSDAY EVENING, THE DAY AFTER THE CASUALTY?**

"I had an incredible store of nervous energy. I had too much to do to allow myself to be tired."

**HOW DID YOU FEEL ABOUT THE ARRIVAL AT PORT (BACK AT NORFOLK)?**

"When we arrived at port I felt safe."

**"When we arrived at port I felt proud."**

**"When we arrived at port I felt welcome."**

**"When we arrived at port I felt happy."**

**"When we arrived at port, I wanted to call or see my family and let them know I was all right."**

**"I was glad to see my parents and friends when we arrived in Norfolk."**

**"I had mixed emotions when I arrived at port. I was glad to be home, but didn't want to come back like that."**

**"I felt hurt when we arrived at port."**

**"I felt good when we first arrived at port, until I found out there was no one there to see me."**

**"Arriving at port was a very sentimental and unrealistic moment for me."**

**"I was glad, when we arrived at port, but saddened of the embarrassment the ship suffers."**

**"When we arrived at port I was anxious."**

**"When we arrived at port I was sad because of the atmosphere created or attitude of everyone."**

**"When we arrived at Norfolk I was sad for the families that lost their loved ones."**

**"When I arrived at port, I felt like I woke up from a bad dream."**

**"It seemed like the Navy was covering up. We were told not to talk to the press when we arrived at port."**

**"I felt set upon by the press when we arrived at port."**

**"When I arrived in Norfolk, I was nervous about the investigations."**

**"At one point I was afraid when we arrived at port."**

**"When I arrived at Norfolk, I wanted to climb inside my wife's body to get away from what happened."**

**"I felt devoid of any particular feeling when we arrived at port. If anything, I felt emotionally exhausted."**

**"Who cares how I felt when I arrived at port?"**

**"I felt very confused when I arrived at port. I was upset that I didn't have an answer about the cause of the explosion. I was also upset that there wasn't anyone on the pier for me."**

"I didn't return with the ship. I escorted remains to Dover. My feeling while waiting on the pier for the ship on the day of return was sad. I was really scared some family member would ask what really happened and I couldn't or wouldn't have been able to give the answer they wanted. I was a very quiet person that day."

**HOW DID YOU REACT TO LEARNING THAT THE SHIP WOULD DEPLOY?**

"When I learned that the ship would deploy, I was upset. I don't feel that shipmates and families had time to try to adjust and feel comfortable being on the ship again."

"I thought that the fact that the ship would deploy again sucked."

"I was upset when I learned that the ship would deploy. I wanted to spend more time with my wife."

"I was sad when I learned that the ship would deploy."

"I felt disbelief when I learned that the ship would deploy."

"I couldn't believe the naval idiots would deploy a maimed ship. I felt it was simply salesmanship by battleship advocates who were responsible for the Navy's decision to deploy the ship."

"I needed more time to prepare when I learned that the ship would deploy again."

"When I learned that the ship would deploy, I was confused. I wondered if we were ready to deploy. There was so much publicity and not much explanation on what had happened."

"To say we could overcome a disaster and be ready for a 6 month cruise two months later, right on schedule, had to be political, but I felt bitter about the decision to deploy later."

"It was hard when I first learned the ship would deploy. My family was scared for us. They didn't want me to go. We all knew that it had to be done. It would have been best for all of us to be away from the press and the publicity. If we had stayed, someone would have hurt one of those camera men."

"I was very enthused to learn the ship would deploy."

"I was overjoyed to learn the ship would deploy."

"I was relieved when I heard the ship would deploy."

"I was happy to learn the ship would deploy! The Iowa and her crew are at their best when they have a purpose. Sitting in port kills the ship and the men."

"I thought it was a good idea to deploy the ship and put all the pain behind us."

"I was proud that we weren't going to let this disaster affect us."



**"I felt that it was OK that the ship would deploy."**

**"When I learned the ship would deploy it didn't matter very much to me, but it did to my family."**

**"When I learned the ship would deploy, I felt good. Deployment was needed. It brought my confidence back about being aboard a ship."**

**"When I learned the ship would deploy I thought, 'That is our job!'. However, I feel in retrospect that it did not give our families time to heal from the accident. I have been on many MED cruises and this one was the worst for family problems."**

**AT THE TIME OF THE CASUALTY AND THE WEEK THAT FOLLOWED DID YOU PROVIDE SUPPORT TO ANYONE WHO WAS UPSET BY THE DISASTER?**

**"I provided support to the captain. I let him know he did the right thing by flooding the turret so we would not all blow up."**

**"I gave support to several members of my division who helped move bodies and combat the fire."**

**"I told my shipmates that they had to go forward with their lives. I also told them that what had happened with our shipmates was because God had wanted it like that, it was meant to be."**

**"I gave support to my shipmates because they kept on talking about the explosion and the shipmates that died. I ended up crying, too."**

**"I supported my shipmates! We all were there. We only talked amongst ourselves because our families didn't understand what we were feeling."**

**"When we pulled in at Norfolk I was part of a detail that was sent to console the family members."**

**"I gave support to others by speaking and opening up with my personal tragedy."**

**"I listened to friends who were involved in firefighting, body handling, and cleanup who just needed to talk it out."**

**"Most of my shipmates were shaken up a bit so I talked to them to calm them down."**

**"I talked to the men who worked for me to try to help them deal with the emotions they were having."**

**"If I saw someone down I tried to talk to them because I know I feel better when I know someone cares what I'm feeling or thinking."**

**"Most of my shipmates on board had to talk and let it out to keep from falling apart."**

**"My shipmates and I questioned one another to try to come up with answers to explain the explosion."**

*Disaster Workers: Trauma and Social Support*

"Several of my men were directly involved. They had some burdens so I tried to help them and referred them to the special teams."

"One of my 'quiet men' did a lot of body handling and we talked quite a bit."

"While standing duty I had a few shipmates come into the office to talk about what had happened. Most of them were E-3 and below and just wanted to talk. It was hard to give that support, but as a petty officer, that is my responsibility."

"Some of my younger shipmates came to me for support. We talked and helped each other. I also helped my children to better understand why I had to go back to the ship and to cope with it."

"My wife was pregnant and she needed support once we arrived in port."

"I comforted my shipmates who had a hard time adjusting. Also, I supported my family who treated me differently when I went home. I told them not to worry. I'm fine physically and emotionally!!!"

**AT THIS TIME, DO YOU EVER THINK ABOUT THE DISASTER OR ITS VICTIMS?**

"There are things I see or hear even today that set me off and remind me of the day of the explosion and my loss of friends and shipmates. I usually have to get away for awhile to clear my head and get back to the job at hand."

"I think about the explosion DAILY. I feel a great sense of loss for the victims and their families and friends, but more so, I feel a great sense of pride in the survivors and their accomplishments since the explosion."

"I still have feelings and bad dreams about the explosion."

"I think about the morale of the ship now and then and how nothing has changed."

"Often when I am alone, I remember the day of the explosion. I think about all the work, the sadness, and the fear of my shipmates and myself. I remember my friends and think about the families of my dead shipmates. I feel so bad for those who died."

"I think about standing watch on the quarterdeck and seeing the plaque on the turret after the explosion."

"I wonder what the future might have held for the victims and the families had the disaster not occurred."

"I think about the disaster once in awhile, but I will never forget it."

"Some of the men who were killed were friends of mine. I was sorry to see their lives end so tragically."

"When someone asks what ship I am from I think about the disaster."

"I think about it when they bring up the disaster in the news. No one will ever know what happened."

"Media and investigators continue to keep the disaster fresh in my mind."

"I still don't think the explosion was accidental. I am sad and angry that so many good men die and those of us remaining on the ship were treated as if we had AIDS."

"I can't completely forget about the disaster because I am still on the Iowa. I still see the turret every day."

"I always think about what I would have done to help if I were on the ship when the turret exploded. I feel bad because most people don't understand how I feel even though I wasn't there when the explosion happened. I helped clean out the guns 4 days later. I don't get nightmares, but I do get chills."

**DO YOU FEEL ANYTHING POSITIVE HAS COME OUT OF THE CASUALTY?**

**YES**

"This casualty has shown that this ship is very capable of doing its job properly."

"This casualty has shown that through our training and professional excellence, we saved our ship."

"Due to this disaster, we have better safety on board the Iowa."

"Because of the disaster, we now realize the danger inside a 16/50 more than ever. Safety can't be overlooked and damage control is paramount in a sailor's training."

"Due to this disaster, the Navy has identified and realized an incredible strength of character in the Iowa's crew."

"I feel that I have grown from the experience of the Iowa disaster emotionally and professionally."

"My family has become closer due to the disaster."

"The disaster brought the crew of the Iowa closer together."

"Knowing that death can strike anywhere at any time is a positive outcome of the disaster."

"My Dad and I are getting along better now than we did before the disaster. Even so, I would rather have the 47 people back who were killed."

"I learned how to deal with such tragedies in a positive and supportive manner."

"From this casualty experience, I learned not to trust the media."

**NO**

"The Navy tried to become more cautious and got more dangerous instead after the disaster. The Navy did not learn how to treat people."

*Disaster Workers: Trauma and Social Support*

"After the disaster, the crew seemed closer at first, but not now."

"I can think of nothing positive which came out of the Iowa disaster."

"The Navy tried to blame one person for the disaster."

"Immediate re-deployment was ludicrous after the explosion."

"The Iowa should not have been doing the shoot in the first place."

"We lost 47 men, the press tried to make the Iowa crew look bad and unsafe, and as a direct result the ship is being decommissioned."

"The ship and its crew were dragged through the mud by the press with no support from the Navy or the government. We are continuing to fight and waste time and money for no reason."

"It takes a lot of media attention and public outcry to make the USN reassess what they've said. I could have told you that investigation was fucked. How did they expect to find any clues after they had us tear all kinds of metal out? I've never figured out how they justified doing it either. I still am totally convinced that they knew exactly what they were doing."

**IF GIVEN THE CHOICE, WOULD YOU VOLUNTEER TO WORK IN A TURRET?**

**YES**

"I would work in a turret. The explosion in turret 2 was an accident, not a suicide."

"I've worked in 5" mounts, 16" mounts would be an interesting change."

"Anything one does has danger in it. I would work in a turret again."

"I know my way around a turret."

"I think of it as a manly or masculine thing to work in a turret."

"I feel the 16 inch turret is still a safe place to be, even during a gun shoot. The explosion was an unfortunate accident. It should not have happened, but it did and nothing can be done to change it."

"I have absolute confidence in the ship and its systems, my superiors, and my shipmates."

**NO**

"If the turret blew up they might blame me."

"I would not work in a turret because of the way the Navy treats these people or I should say chiefs and low ranking officers do. Their way of management leads to such disasters."

**"Working in a turret is like working in a fire room."**

**"I would never work in a turret!"**

**"I am scared to work in the turret because being in there gave me a bad feeling."**

**"I don't want old memories to surface again so I would not work in a turret again."**

**"I'm clumsy and there's too many things in a turret I could hurt myself with."**

**IF GIVEN A CHOICE, WOULD YOU WORK ON A BATTLESHIP AGAIN?**

**YES**

**"Battleships have good survivability in combat. The ship took a hit and kept going."**

**"Anything else is a step down, battleships are the best ships there are."**

**"I feel safe on battleships."**

**"Battleships have the best living conditions."**

**"I would work on a battleship because I feel a lot safer in a battleship with all the armor protection than the newer ships. Also, our training inside the turret is a lot safer than before the explosion."**

**"Battleships are essential to the force and are a demonstration of U.S. naval strength."**

**"There's an indescribable pride I feel, knowing that I work on the most powerful type of surface combatant ship in the world. I get a sense of purpose and a feeling of worth in my life as a battleship sailor."**

**"It would be my honor to serve on a battleship again."**

**NO**

**"Only at gunpoint would I work on a battleship again."**

**"I just don't like the battleship Navy. It is too much of a dog and pony show."**

**"Too many parts fail on a battleship."**

**"I'm afraid to work on a battleship again."**

**"Battleships are too old."**

**"I will not work on the Wisconsin or the Missouri because neither of those ships can pass a test."**

**"It takes too much work to keep these old ships steaming."**

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"I personally think battleships are outdated. Gunner's mates are not properly trained and they should not have young seamen working in an environment in which they have no knowledge."

"There is no camaraderie at all on a battleship. During the firefighting, there was organized looting going on."

"In the future I want to try to work on something different from a battleship."

**USS IOWA DISASTER:**  
**USS IOWA NON-DISASTER GROUP**

## USS IOWA NON-DISASTER GROUP

### *Summary of Response Frequencies*

Surveys were completed by 420 individuals, an 88% response rate. Eighty-nine percent (89%) of the surveys were completed between 2 August and 4 August 1990, approximately 16 months after the USS Iowa explosion. The respondents were 100% male, 95.3% enlisted, and 68.5% white, with the majority having the rank of E2 or E3. The median age of the respondents was 22, with a range from 18 to 47. Fifty-three percent (53%) were single. A broad range of skills was represented including gunner's mates, machinists, fire fighters and mess management. The education level was high: 95.1% graduated from high school and 34.1% reported at least some college. For 92.6%, this was their first encounter with a disaster. Only three of these respondents had joined the USS Iowa crew before the explosion and none was on board at that time.

### **The Experience of the Disaster**

The respondents from the USS Iowa Non-Disaster group were not aboard the ship at the time of the explosion. Some Non-Disaster respondents were aboard other ships at the time of the explosion, some were Iowa crew members at the time but not aboard the ship, and some knew at the time of the accident that they were going to join the Iowa crew. All respondents were aware of the disaster, as it was a major news event. The following is a summary of these respondents' experience of the USS Iowa explosion:

- \* Seventy percent (70%) said they would volunteer to work on a battleship again, and 49% said they would volunteer to work in a turret.
- \* Sixty-eight percent (68%) still think about the disaster.
- \* Fifty-four percent (54%) were "not at all" fatigued the day after the explosion, and 76% said they did not alter their normal pace due to the disaster.
- \* Fifty-seven percent (57%) felt "moderately" to "very" sad when they thought of the victims of the disaster and 23% felt "moderately" to "very" angry.
- \* Thirty-eight percent (38%) felt that something positive came from the disaster.
- \* Fourteen percent (14%) reported that their family was "very supportive" following the explosion. Ten percent (10%) said their friends were "very supportive" and 10% said their shipmates were "very supportive".
- \* Thirteen percent (13%) felt "moderate" to "a great deal" of stress following the explosion. Eight percent (8%) supported others who were upset.
- \* Thirty-nine percent (39%) felt "moderately" to "very much" that "it could have been me" when thinking about the explosion.
- \* Eight percent (8%) reported having contact with the victims' families following the disaster.



*Summary of Written Comments*

Respondents were asked several open-ended questions regarding their response to the explosion and their activities at that time and since then. The following is a sample of written comments in response to these questions.

**HOW DID YOU FIRST HEAR OF THE USS IOWA CASUALTY?**

"I first heard about the casualty on the TV news."

"I heard about the disaster by word of mouth."

"I heard about the disaster while aboard another ship."

"My wife called me from her job and told me about the explosion on the Iowa."

**WHAT WAS YOUR INITIAL REACTION? (BRIEFLY DESCRIBE YOUR FIRST RESPONSES TO HEARING ABOUT THE EXPLOSION AND THE DEAD VICTIMS. WAS THERE A CHANCE THAT YOUR SHIP MIGHT BE CALLED TO ASSIST?)**

"I was scared when I first learned of the explosion."

"I was shocked when I first heard about the disaster."

"I felt a sense of disbelief when I learned about the explosion."

"I was curious about the details of the explosion when I first heard about the disaster."

"I was hurt when I heard about the explosion."

"I felt concerned when I first heard about the explosion."

"I was sorry for the families of the dead when I first heard about the casualties."

"I felt sad when I first heard about the explosion. The disaster was a tragedy."

"I was worried about the men and the ship when I first learned of the explosion."

"I was fearful the ship would be decommissioned after learning of the explosion."

"I didn't think about the disaster much until I got my orders to work on the USS Iowa. I wondered why they chose me to go to that ship."

"I wanted to get to the ship to help out when I first learned of the explosion."

"When I learned of the disaster, I had just arrived home on 11 days leave prior to reporting to the Iowa. I experienced some shock and wondered about the future of the Iowa."

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"I was at home getting ready for school when I learned about the Iowa explosion. I kept changing the channels on the radio to find out more about the casualty. I was sympathetic and concerned for the victims and their families."

"I felt grief for the crew and families of the Iowa."

"I prayed for all aboard the Iowa when I first learned of the disaster."

"I did not want to come to the ship when I learned about the casualty."

"When I first heard about the disaster, I did not think about the dead. I felt more for the survivors of the explosion."

"I felt a mild shock when I heard about the explosion, but it was rather distant since it was happening to someone else."

"I didn't care about the disaster since I was not involved."

"The Iowa explosion was just another news story to me."

"The Iowa explosion was a terrible accident, but it didn't bother me at all. I wasn't even in the Navy at the time so I wasn't involved in any way."

**DESCRIBE YOUR ACTIVITIES DURING THE FIRST HOURS AFTER YOU HEARD ABOUT THE EXPLOSION. (WHAT WERE YOU THINKING AND FEELING AT THAT TIME?)**

"After the explosion I was wondering how and why it occurred."

"I felt sad after the explosion."

"After the explosion I felt bad for all involved."

"After learning of the explosion, I thought about how many lives were lost."

"After hearing about the explosion, I wondered if I knew anybody on the ship."

"I thought about the family of someone I knew on board the Iowa."

"I imagined the morale of the crew was very low after the explosion."

"I worried about people on the Iowa."

"After learning of the explosion, we discussed who was going to be put on the Iowa to replace the dead crew members."

"I watched TV after learning of the disaster. I thought that could have easily been me in that disaster."

"After hearing about the explosion, I had a feeling I would be a replacement for someone who died in the turret."

"After hearing about the disaster, I thanked my lucky stars that I wasn't on board the ship when the explosion happened. I felt bad for the families of the dead. I

guess I held my wife and children a little closer that day and tried not to think of what would happen to them if it had been me who was killed."

"My initial response was to watch the news and to find out what happened on board the ship. I wanted information to answer questions asked of sailors after any type of incident."

"After the disaster, I couldn't think of much other than the explosion. There wasn't actually anything I could do at that time, but I really wanted to help."

"I became interested in life insurance after the Iowa explosion."

"After the Iowa explosion, I realized how serious it is being in the military."

"After the Iowa explosion, I wondered what would've gone through their minds, if they had had time to think about the explosion."

"I didn't have any relationship with anyone aboard the Iowa. After the Iowa explosion, I went to bed and didn't let it bother me."

"I performed my regular activities after the explosion. I didn't feel anything."

**HOW DID YOU REACT TO LEARNING OF YOUR ASSIGNMENT TO THE USS IOWA?**

"I was shocked when I learned that I was assigned to the Iowa."

"I was scared and nervous when I learned that I was assigned to the Iowa."

"I was curious to learn more about the incident when I learned that I was assigned to the Iowa."

"I was disappointed when I learned that I was assigned to the Iowa. I wanted to work on a small ship."

"After I learned that I was assigned to the Iowa, I was angry at whoever decommissioned the ship."

"When I learned that I was assigned to the Iowa, I thought it would be interesting to work on a battleship."

"When I learned that I was assigned to the Iowa, I wondered about the morale of the crew."

"I felt great about it when I learned that I was assigned to the Iowa."

"I was proud to be assigned to the Iowa."

"I was excited when I learned that I was assigned to the Iowa."

"I felt pleased to be assigned to the Iowa."

"When I learned that I was assigned to the Iowa, I felt that it would be a good chance for me to bring the Iowa back up to par."

*Disaster Workers: Trauma and Social Support*

"When I learned that I was assigned to the Iowa, I looked forward to it."

"I had no problem with being assigned to the Iowa."

"My being assigned to the Iowa caused a lot of family problems for me. On 15 April 1989 I knew I was coming to the Iowa and, after the explosion, my wife and family tried to make me get different orders."

"I thought being assigned to the Iowa was just another job. My oldest daughter had problems with me going to the ship. She thinks I will be killed on the ship. She started having headaches and all other problems too."

"I was scared. My wife cried when I told her I was going to be sent to the Iowa. My parents didn't say a word when I told them. My class was quiet when they learned I was going to the Iowa while they all had other commands. I thought, 'Why me?'"

"I was afraid I was going to a ship with paranoids. I believed I would have to work in dangerous conditions every day."

"When I first learned that I was assigned to the Iowa I didn't know what to say. I figured nothing like the explosion could happen again."

"I felt honored to be able to work on the Iowa, but at the same time I was scared. I didn't want the same thing to happen again."

"Before the explosion I was very happy to be going to work on the Iowa, but afterward I was scared."

"I knew before the tragedy occurred that I was going to the Iowa. After the explosion occurred, most people would look at me and shake their heads and tell me, 'I feel sorry for you for having to be stationed on that ship.' So I reacted by not telling people where I was going."

**AT THE TIME OF THE DISASTER AND THE WEEK THAT FOLLOWED DID YOU PROVIDE SUPPORT TO ANYONE WHO WAS UPSET BY THE DISASTER?**

"My wife was moderately upset. I provided support for her after the explosion."

"I provided only mild support to my family. They didn't know what to think about their son being assigned to a ship that just had a major explosion."

"At school, we started an Iowa tragedy fund after the explosion."

"My wife suddenly realized just how dangerous my job in the Navy really is after the explosion. We talked for several days about my role and responsibilities in the Navy."

**AT THIS TIME, DO YOU EVER THINK ABOUT THE DISASTER OR ITS VICTIMS?**

"At this time I wonder how the explosion happened."

"The disaster is spoken of on a daily basis on board Iowa in one form or another."

"I feel that the media and the Navy handled the post-accident period extremely poorly and made it very difficult for people to get over the loss."

"At this time, I think about the disaster and its' victims. I am glad that I was not there at the time of the explosion."

"Never will I forget the fallen men of the Iowa and the CO's grief and show of strength that kept the Iowa together after the disaster."

"When I see the plaque on turret 2 I think about the disaster victims."

"As a member of Iowa's wardroom I am involved with memorials, private discussions, and published articles having to do with the disaster."

"I wish that the whole incident would be made part of the past, because rehashing over the disaster is causing a great deal of undue stress on the victims' families."

"I wonder what it was like to go through that kind of tragedy on board the Iowa."

"Now I think about the disaster and I wonder if they will ever tell the truth about the investigation and what actually happened."

"Now I think about the disaster and realize it could have been my brother who was killed in the explosion on the Iowa."

"Every day I come aboard the Iowa I say a small prayer for the families and I thank God that He was taking care of me."

"When I see memorials I think about the disaster."

"When I hear about the disaster on the news I am reminded."

"When I talk with the other shipmates who were here I feel as if I was here also."

"I try to imagine what the day of the explosion was like."

"I walk through the turret and think of burned flesh and wasted lives."

"The disaster is part of the history of this ship. I am proud of this ship and am not ashamed of the accident. The disaster is just part of life now. The explosion has been too closely linked to the ship's name by the media not to think about it."

"I find myself frequently staring at Turret 2, trying to image the incredible suffering that took place in it."

"I feel like I was there during the disaster, even though I wasn't."

**DO YOU FEEL THAT ANYTHING POSITIVE HAS COME OUT OF THE CASUALTY?**

**YES**

**"There are more safety precautions now than before the disaster."**

**"We are more ready for emergencies now than we were before the disaster."**

**"Due to the disaster the Navy is decommissioning the Iowa."**

**"I don't take anything for granted since the explosion on the Iowa."**

**"From my experience with the Iowa, I learned to deal with grief and fear and go on with my life."**

**"I think the disaster has made us more aware of the dangers involved with the things we do."**

**"I feel the Navy has learned a great lesson in safety, negligence, and the effects of human tragedy."**

**"The Iowa's crew, including new arrivals, are closer and a better team than any of the five other ships I've been on."**

**"It's hard to think that anything positive could come from such a disaster, but it displays real life and death and what one's mind is able to withstand and still go on."**

**"The disaster created a sense of togetherness, pride, and determination within the crew through knowing they could overcome something as devastating as this."**

**"The Navy's investigation of the explosion was extremely biased, unfair, and it opened many people's eyes to what the Navy can do in a situation such as this."**

**NO**

**"There was a bad investigation into the cause of the explosion."**

**"As a result of the disaster they are decommissioning the ship."**

**"The explosion showed people how unsafe battleships are."**

**"The Navy is using a sailor as a scapegoat to relieve themselves of the blame for the disaster."**

**"Nothing good can come out of the loss of innocent lives."**

**"There has been too much negative publicity for the Navy."**

**"Nothing positive came from the disaster on the Iowa. At the present time, no one knows what happened. Also, no one praised the guys for their damn good job of saving the ship. They should have been treated like heroes."**

**"The Iowa lost a good captain, our shipmates lost friends, and the media made the crew look bad."**

**IF GIVEN A CHOICE, WOULD YOU VOLUNTEER TO WORK IN A TURRET?**

**YES**

"It is safe to work in a turret."

"If I were trained first, I would work in a turret."

"It is important to be familiar with equipment that pertains to my job. Therefore, I would work in a turret."

"The explosion was just a freak accident. I would work in a turret."

"I don't think the same disaster could happen again on the same ship. There are too many checks and safety's for it to reoccur."

"Working in a turret is an important job."

"I would volunteer to work in a turret to see what really goes on."

"I like working with guns, so I think I would like to work in a turret."

"I am assigned to turret #1 right now as a primerman and I like it."

"I would volunteer to work in a turret in a heartbeat."

"I do work in a turret, it's my job"

"I would work in a turret if I was needed, but with mental reservations."

"I would work in a turret because the 47 men who died to protect me worked there, now it's my turn."

**NO**

"I do not want to work in a turret. I am happy now where I am."

"It is not part of my job description to work in a turret."

"I am not trained to work in a turret."

"Anything can happen in a turret, it's too dangerous."

"I worry about high pressure steam in a turret."

"I work in a turret. I think unsafe things happen during a gun shoot. You can only be sure about yourself. I wonder if other people are behaving safely."

"I would not work in a turret because the equipment and powder are too old. The true reason for the explosion has not really been determined. The quality of the people working in the turret is totally unacceptable. (They don't screen the people well enough coming into the Navy; it's too easy to end up having to work with someone with mental problems.)"

"Two of the men who died in the explosion do exactly what I do in the Navy."

"I worry about having to work with unqualified, sick people."

"The method of firing and equipment are very old and have become obsolete. It's not really safe for anyone in the turrets anymore."

**IF GIVEN A CHOICE, WOULD YOU WORK ON A BATTLESHIP AGAIN?**

**YES**

"The size of the battleship is big, but not too big. I would work on a battleship again."

"I am transferring to the Wisconsin after the Iowa decommissioning."

"I could get some good experience working on a battleship."

"I love these old ships!"

"There is a type of mystique, a sense of pride belonging to a battleship that no other ship has."

"Hopefully I'll be available when the Iowa is re-commissioned."

**NO**

"Battleships are not modern enough, too old."

"Battleships have low overheads."

"Battleships are too confined."

"I have done my time on battleships, now it is someone else's turn."

"Battleships are too much work."

"There is too much politics on a battleship."

"Battleships are dangerous."

"I wouldn't work on a battleship again because next time I may not be given a choice for a work space."

"Battleships are too obsolete. This is the modern Navy of today. The Navy must all stop living in a fantasy. Let the battleships rest in peace."

"The equipment and systems are all in poor condition on battleships. There is a severe lack of material support on battleships, it makes the job so hard to accomplish. I get the impression that the battleship is more concerned with prestige and heritage than it is with getting the parts and knowledgeable personnel to make



the ship mission ready. Tradition and glamor do not win wars, parts and know-how do."

**USS IOWA DISASTER:  
USS WISCONSIN DISASTER GROUP**

## USS WISCONSIN DISASTER GROUP

### *Summary of Response Frequencies*

Surveys were completed by 19 individuals on the USS Wisconsin who had been crew on board the USS Iowa at the time of the explosion, a 66% response rate. Four respondents reported being within 100 feet of the explosion when it occurred. All of the surveys were completed on 31 July or 1 August 1990, approximately 16 months after the USS Iowa explosion. The respondents were 100% male, 77.8% white, and all but one were enlisted. All had joined the crew of the USS Iowa before the explosion occurred. The median age of the respondents was 24, with a range from 19 to 27. Forty-seven percent 47% were single, and an equal percentage were married. Occupation was varied, but the largest percentage of the respondents (25%) were gunner's mates and 19% were fire fighters. The education level was very high; 100% graduated from high school and 21% had at least some college. For 94.7%, this was their first encounter with a disaster.

### **The Experience of the Disaster**

Because of the small size of this group (N=19), the number of respondents rather than the percentage will be reported.

- \* Sixteen (16) still think about the disaster.
- \* Thirteen (13) said they would volunteer to work on a battleship again, and the same number said they would work in a turret.
- \* Nine (9) had been back inside Turret 2 since the explosion, 4 within a week after the explosion occurred.
- \* Seven (7) had contact with victims' families following the explosion.
- \* Six (6) were on board the USS Iowa at the time of the explosion, although none reported fighting the fire directly.
- \* Six (6) reported that their family was "very supportive" following the explosion.
- \* Two (2) said their friends were "very supportive" and 4 said their shipmates were "very supportive".
- \* Six (6) experienced "moderate" to "a great deal" of stress following the explosion.
- \* Six (6) supported others who were upset.
- \* Six (6) felt "very much" that "it could have been me" when thinking about the dead from the explosion.
- \* Six (6) feel that something positive came from the disaster.
- \* Five (5) worked with the dead directly.

- \* Felt most people cannot be trusted. (7)
- \* Felt lonely even when with people. (6)
- \* Felt lonely. (6)
- \* Felt less upset or angry about things which once caused you to be upset or angry. (6)
- \* Felt tense or keyed up. (6)
- \* Trouble falling asleep. (5)
- \* Felt blocked in getting things done. (5)
- \* Felt people will take advantage of you if you let them. (5)
- \* Felt low in energy or slowed down. (4)
- \* Sleep that was restless or disturbed. (4)
- \* Others not giving you proper credit for your achievements. (4)
- \* Felt so restless you couldn't sit still. (4)
- \* Felt easily tired. (4)
- \* Drank more alcoholic beverages. (4)
- \* Felt easily annoyed or irritated. (7)
- \* Got into frequent arguments. (4)

### *Summary of Written Comments*

Respondents were asked several open ended questions regarding their response to the explosion and their activities at that time and since then. The following is a sample of written comments in response to these questions:

#### **WHAT WAS YOUR INITIAL REACTION?**

"I was shocked and scared after hearing of the explosion."

"My reaction to hearing about the disaster was shock, confusion, and fear."

"I reacted to the news of the Iowa disaster with shock. I couldn't believe what had happened."

"I felt confused when I heard about the Iowa disaster."

"My initial reaction was disbelief when I heard about the Iowa explosion."

"When I first heard about the explosion on the Iowa, I felt a great feeling of luck for not having been there."

**DESCRIBE YOUR ACTIVITIES DURING THE FIRST HOURS AFTER THE EXPLOSION.**

"After the explosion, I wondered how I was going to get off the ship."

"After the explosion, I helped with fighting the fire."

"I worked removing bodies after the explosion."

"I cried after the explosion."

"After the explosion, I spent the time running for whatever I was told to get."

"I helped out, assisting anyone in any way possible after the explosion."

**WERE YOU IN ANY PHYSICAL DANGER AT ANY TIME DURING YOUR DISASTER WORK?**

"I was in turret 1 during the disaster. We had a misfire in the left gun which could have cooked off. Also, turret 2's powder bags were right next to turret 1's. Explosions in the powder bags most likely would have followed a chain reaction into turret 1. I do not mean to overstate the danger. In retrospect, the danger was very minimal, but we did not know that at the time."

"During the fire I was in physical danger. If the powder had ignited turret 1 may have exploded."

**AFTER THE EXPLOSION DID YOU GO INTO TURRET 2?**

"(1) The day after the explosion I went into turret 2 to help with damage assessment and the continued clean-up. (2) About 1 week after the explosion, I was made the Turret 2 officer. I was in charge of the clean-up and renovation of the turret and was supposed to lead the repairs and shooting of turret 2. It remains one of my greatest disappointments that we did not fix and shoot that turret."

"I went in to turret 2 while fire fighting."

"It was very eerie in the turret. I couldn't stay in very long. I have cold chills and bitter memories of what I saw after the disaster."

**DID YOU WORK WITH ANY OF THE DEAD FROM THE CASUALTY?**

"I worked carrying the dead from the turret to the freezer and to the helicopter."

"I worked removing the dead in from various spaces in the turret."

**DID YOU ENCOUNTER ANY PROBLEMS IN DOING YOUR DISASTER ASSISTANCE WORK?**

"I wrote paperwork on the accident. None of the information blocks allowed anything resembling correct answers. For example, 'cause: (a) employee's mistake, (b) mechanical breakdown."

"I knew almost all the people in the turret. I wanted to help more, but could not."

"The turret was dark and had water everywhere."

**DID YOU EXPERIENCE ANY DIFFICULT CHOICES OR DECISIONS IN DOING YOUR DISASTER WORK?**

"I could not handle the bodies while doing disaster work."

"It took about all I had, just to go in to the turret to help with clean up."

**DID YOU HAVE ANY CONTACT WITH ANY OF THE FAMILIES OF THE VICTIMS?**

"Families were waiting on the pier when the Iowa returned from deployment. They wanted tours of turret 2. Families came in January, April, and July to the Iowa and the Wisconsin. I also had contact with families through letters I received from them and, in one case, I sent a letter to a family of one of the victims."

"After the memorial service I was chosen to be at a reception for the families."

**WHAT, IF ANYTHING, HELPED YOU HANDLE THE STRESS OF THE WORK WITH THE CASUALTY AND ITS VICTIMS?**

"Nothing helped me handle the stress."

"Strong support from above allowed me to handle the stress."

"Being able to cry helped me handle the stress. Crying was the only outlet, other than talking about it with other survivors."

"My mother and father stayed up countless hours listening to me cry into the phone. Their support helped me deal with the stress."

**HOW DID YOU FEEL ABOUT THE ARRIVAL AT PORT (BACK AT NORFOLK)?**

"When we arrived at port, I was glad to be back."

"When we arrived at port, I was curious."

"When we arrived at port, I was upset at seeing the distraught families of the deceased."

"I wanted to get off the ship, when we arrived at port."

"When we arrived at port, I was relieved, happy, sad, and very angry at the press."

"It was really special when we arrived at port! It is one of the things I remember most. That was also the only time the Iowa wasn't being pulled through the mud."

**HOW DID YOU REACT TO LEARNING THAT THE SHIP WOULD DEPLOY?**

"I was puzzled when I learned that the ship would deploy."

"I was glad to get away from the press, when I learned that the ship would deploy."

"I reacted with disbelief when I learned that the ship would deploy."

"I looked forward to leaving port when I learned that the ship would deploy. It was a chance to get away and carry on as normal or at least try."

"I was very, very happy when I learned that the ship would deploy.."

**AT THE TIME OF THE CASUALTY AND THE WEEK THAT FOLLOWED DID YOU PROVIDE SUPPORT TO ANYONE WHO WAS UPSET BY THE DISASTER?**

"I supported my family."

"My mother and subordinates required support."

"I sat with shipmates talking, laughing and crying over some of the guys we knew."

"Everyone found solace with each other."

**AT THIS TIME, DO YOU EVER THINK ABOUT THE DISASTER OR ITS VICTIMS?**

"At this time, I think about the disaster because it could happen again."

"When someone asks about the disaster I think about the day of the explosion."

"Every Goddamn day I think about I think about the disaster."

**DO YOU FEEL ANYTHING POSITIVE HAS COME OUT OF THE CASUALTY?**

**YES**

"Safety has improved due to the disaster."

"They started stressing safety since the disaster."

**NO**

"The Navy has mishandled the disaster."

"The press continues its harassment of the ship and its crew."

"Did anything positive come out of the Salem witch hunts or the Spanish inquisition?"

**"The Navy has mishandled this disaster. The government is more concerned with their image apparently. The press continues their harassment to a lesser degree."**

**IF GIVEN A CHOICE, WOULD YOU VOLUNTEER TO WORK IN A TURRET?**

**YES**

**"Working in a turret is my job."**

**NO**

**"I do not care for it working in a turret."**

**"I'm not interested in working in a turret."**

**IF GIVEN A CHOICE, WOULD YOU WORK ON A BATTLESHIP AGAIN?**

**YES**

**"I like these ships. I would love to work on a battleship again."**

**"I am on another battleship now."**

**NO**

**"I do not enjoy sea duty, I don't want to work on a battleship again."**



**USS IOWA DISASTER:  
USS WISCONSIN NON-DISASTER GROUP**

## USS WISCONSIN NON-DISASTER GROUP

### *Summary of Response Frequencies*

Surveys were completed by 444 sailors aboard the USS Wisconsin, a 74% response rate. Ninety-eight percent (98%) of the surveys were completed between 31 July and 2 August 1990, approximately 16 months after the USS Iowa explosion. None of these respondents was part of the USS Iowa crew, and none was on board the USS Iowa at the time of the explosion. The respondents were 100% male, 67.8% white, and 98.6% enlisted, with the majority having the rank of E3 or E4. The median age of the respondents was 22, with a range from 17 to 44. Fifty-eight percent (58%) were single. A broad range of skills was represented including fire fighters, electricians, gunner's mates and machinists. The education level was high; 95.2% graduated from high school and 29.6% reporting at least some college. For 90.3%, this was their first encounter with a disaster.

### **The Experience of the Disaster**

The respondents from the USS Wisconsin Non-Disaster group were not aboard the USS Iowa at the time of the explosion. However, all the respondents were aware of the disaster, as it was a major news event. In addition, the USS Wisconsin is a similar ship to the USS Iowa, and the USS Wisconsin personnel had jobs similar to those who were aboard the USS Iowa at the time of the accident. The following is a summary of these respondent's experience of the USS Iowa explosion:

- \* Seventy-two percent (72%) felt "moderately" to "very" sad when they thought of the victims of the disaster and 39% felt "moderately" to "very" angry.
- \* Sixty-five percent (65%) still think about the disaster.
- \* Fifty-eight percent (58%) felt "moderately" to "very much" that "it could have been me" when thinking about the explosion.
- \* Forty-five percent (45%) said they would volunteer to work on a battleship again, but 73% said they would not volunteer to work in a turret.
- \* Forty percent (40%) felt "moderate" to "a great deal" of stress following the explosion. Thirteen percent (13%) supported others who were upset.
- \* Thirty-eight percent (38%) feel that something positive came from the disaster.
- \* Thirty percent (30%) were "not at all" fatigued the day after the explosion, and 60% said they did not alter their normal pace due to the disaster.
- \* Twenty-seven percent (27%) reported that their family was "very supportive" following the explosion. Seventeen percent (17%) said their friends were "very supportive" and 18% said their shipmates were "very supportive".

### ***Disaster Workers: Trauma and Social Support***

- \* Five percent (5%) said that a close friend or friends had been killed in the explosion. Ten percent (10%) said that at least one of their acquaintances had been killed.
- \* Six percent (6%) reported having contact with the victims' families following the disaster.

Respondents were asked to think back to the week of the disaster, and reported "often" having the following reactions:

- \* Spent a great deal of time at work. (34%)
- \* Spent time with friends and peers. (31%)
- \* Had thoughts of the accident and its victims. (27%)
- \* Talked with spouse/significant other about disaster. (22%)
- \* Waves of strong feelings about explosion. (16%)
- \* Felt very tired. (15%)
- \* Pictures of it popped into their minds. (14%)
- \* Felt lonely/blue. (12%)
- \* Any reminder brought back feelings about the accident. (9%)

A wide range of symptoms was reported after the disaster. For this report, we selected the level of 20% of the group that reported symptoms at the level of "moderately", "quite a bit" or "extremely". The symptoms and the percentage of the population reporting this level of distress are listed below:

- \* Worried too much about things. (43%)
- \* Felt easily annoyed or irritated. (41%)
- \* Felt people will take advantage of you if you let them. (40%)
- \* Felt most people cannot be trusted. (40%)
- \* Temper outbursts that you could not control (25%)
- \* Had repeated unpleasant thoughts that won't leave you mind. (34%)
- \* Felt lonely. (34%)
- \* Others not giving you proper credit for your achievements. (35%)
- \* Urges to beat, injure, or harm someone else. (34%)
- \* Felt lonely even when with people. (30%)

- \* Felt blocked in getting things done. (30%)
- \* Felt blue. (30%)
- \* Felt low in energy or slowed down. (29%)
- \* Had urges to break or smash things. (29%)
- \* Felt nervousness or shakiness inside. (29%)
- \* Felt tense or keyed up. (28%)
- \* Felt no interest in things. (26%)
- \* Trouble remembering things. (26%)
- \* Got into frequent arguments. (25%)
- \* Felt so restless you couldn't sit still. (25%)
- \* Felt that you are watched or talked about by others. (25%)
- \* Sleep that was restless or disturbed. (24%)
- \* Drank more alcoholic beverages. (24%)
- \* Felt others do not understand you or are unsympathetic. (24%)
- \* Felt easily tired. (23%)
- \* Trouble concentrating. (23%)
- \* Trouble falling asleep. (22%)
- \* Felt less interested in activities once important to you. (22%)
- \* Had to check and double-check what you have done. (22%)
- \* Had a poor appetite. (21%)
- \* Felt that people are unfriendly or dislike them. (21%)
- \* Felt very self-conscious with others. (21%)
- \* Feelings being easily hurt. (20%)
- \* Difficulty making decisions. (20%)
- \* Felt hopeless about the future. (20%)
- \* Thoughts of death or dying. (20%)

*Summary of Written Comments*

Respondents were asked several open ended questions regarding their response to the explosion and their activities at that time and since then. The following is a sample of written comments in response to these questions.

**HOW DID YOU FIRST HEAR OF THE USS IOWA CASUALTY?**

"I first heard of the Iowa casualty over the ship's announcing system."

"I heard about the disaster on the evening news on TV, and read about it in the newspaper."

"I first heard about the disaster by word of mouth."

"I found out about the explosion from a Teletype/message."

"When I woke up the morning of the casualty, I heard that there was an explosion. I thought the explosion until I got on watch that day I found that it was the Iowa."

**WHAT WAS YOUR INITIAL REACTION?**

"When I first heard about the explosion I wondered, 'How could it happen?'. I could not believe the turret had blown up."

"When I first heard about the explosion I wondered, 'Jesus Christ, how the hell did that happen?'. I couldn't understand how 47 people could be dead. I couldn't understand how something like the Iowa, a ship which was considered indestructible, could have a turret explosion."

"When I first heard about the explosion I was on watch. I just sat there wondering what was going on and I felt scared and sad."

"My initial response to the news of the explosion was sympathy for the families of those who had been killed."

"Initially I reacted to the news of the explosion with awe, chills, and deep thought."

"I felt sad when I first heard about the explosion. It made me think of the unsafe conditions we have to serve in."

"When I first heard about the explosion I felt remorse, sorrow, and grief."

"An explosion could happen on the Wisconsin."

"I was worried when I first heard about the explosion because I knew I was going to a ship like the Iowa."

"I was surprised at first when I heard about the explosion and then I was relieved that it wasn't as disastrous as it could have been."

"I thought, 'Oh shit, what if my boat blows up, too?'"

"I do not ever want to be on a Navy ship like the Iowa."

"My initial reaction when I heard about the explosion was having an urge to help, but not being able to. I was disappointed and sad that I was unable to help the men on the Iowa."

"When I first heard about the explosion I felt sick inside. I felt for all of the family members who were wondering, 'Is my son still alive?'"

"When I first learned of the explosion on the USS Iowa, I made the assumption someone didn't follow safety procedures."

"I was scared when I first heard about the Iowa explosion."

**DESCRIBE YOUR ACTIVITIES DURING THE FIRST HOURS AFTER YOU HEARD ABOUT THE EXPLOSION.**

"Following the explosion I had concern for the crew."

"Following the explosion I had concern for the families."

"Following the explosion I kept thinking about what my wife would do if I were killed in an explosion."

"Following the explosion I felt sorry for the families and thanked God for sparing my life a little while longer."

"Following the explosion I hoped they would never fire the guns again."

"Following the explosion I constantly watched the news and wondered how many men were killed."

"Following the explosion I thought about some of the sailors who still had many years ahead of them that were cheated out of a future. I also thought about the families of the dead."

"I wasn't able to concentrate on much following the explosion. I was restless and distracted from my duties."

"I felt the Iowa disaster was the most terrifying event in naval history."

"I couldn't believe the turret had exploded. I was depressed for a while following the explosion and I lost a lot of confidence in the Navy."

"All that time at sea I could have been killed. Following the explosion I was terrified of the whole action. I just wanted to get back in port and see my family and friends again and mostly get off that ship."

*Disaster Workers: Trauma and Social Support*

"I felt bad for the families of the dead."

"Following the explosion I tried to stand a normal watch, but everyone was talking about the incident. I was feeling lucky that it wasn't on board my ship, yet at the same time feeling sorry for the Iowa's crew. I could just imagine what they were feeling."

"Following the explosion, I kept a normal routine for myself. I didn't know any of the victims and didn't feel any personal sense of loss."

"I felt numbness after hearing of the explosion."

"Following the explosion I talked to people, comparing ideas about how the explosion might have happened. My biggest concern was for the crew and the families. I wondered how long it would be before we on the Wisconsin would be in the same situation those folks on the Iowa."

**AT THE TIME OF THE DISASTER AND THE WEEK THAT FOLLOWED DID YOU PROVIDE SUPPORT TO ANYONE WHO WAS UPSET BY THE DISASTER?**

"Following the disaster, my mom was worried that battleships were not safe."

"A lot of the guys I work with were very close to some of the guys who died. They wrote each other all the time. I tried to comfort the guys I work with as much as possible by being strong myself."

"There were two people in work center with a great deal of concern for the disaster. One person had been on the Iowa. I provided time off work for them to attend services for the casualties of the Iowa."

"I put a bigger work load on the men to remove time for thought about the disaster. I kept the crew pulled together."

**AT THIS TIME, DO YOU EVER THINK ABOUT THE DISASTER OR ITS VICTIMS?**

"I wonder what the victims families think."

"I wonder why the investigation took so long to find out that the cause of the explosion may have been in the powder?"

"I think about the disaster when the press whips up hysteria every so often. I resent the media's patronizing and skeptical attitude."

"I wonder why the Navy was so careless?"

"I could have been killed in the explosion."

"It could have been someone I knew who was killed in the explosion."

"Disaster is only around the corner. We must be very careful not to allow carelessness into our ship."

"Accidents happen, you have to be prepared."

"I work in turret two on the Wisconsin. Every time a round is fired, I feel scared. I am very thankful when firing is all over with."

"I think about the disaster when I go in the turret."

"I think about the disaster when we fire our guns."

"I think about the disaster when things go wrong in our mounts and turrets (which is often)."

"I still believe the explosion was not an accident. Someone blew up that turret."

"I just wonder what it would have been like for the Navy to totally ruin my reputation as they did to that man on the Iowa."

"It is part of my job to think about the disaster."

**DO YOU FEEL ANYTHING POSITIVE HAS COME OUT OF THE CASUALTY?**

**YES**

"The Navy's carelessness and disregard for human life has been brought out into public view."

"Maybe the Wisconsin will be decommissioned."

"We have stopped firing our guns on the Wisconsin."

"The disaster has increased public awareness and appreciation for people serving in the armed forces."

"There has been more safety since the explosion."

"I have developed trust in organization since the explosion."

"They stopped shooting for the time being and they are slowly decommissioning all four battleships due to the disaster."

"If they prove it was not an intentional act something positive has come out of the disaster."

"Before the incident, people had no idea just how dangerous our job can be. Now they understand the killing power we can deliver. We can also kill ourselves. Battleship work is a dangerous job."

"The possibility of shutting down all battleships is positive."



*Disaster Workers: Trauma and Social Support*

**NO**

**"They need to determine the cause of the explosion before people fire again."**

**"The Navy has cancelled 16" gun firing since the Iowa disaster."**

**"It was a horrible disaster that the press went nuts over."**

**"The men in turret two should not have died."**

**"We are still putting guys' lives on the line by using 16" guns on battleships. The guns are unsafe and outdated."**

**"The Navy ruined a man's career and are still not sure what happened."**

**"In the long run, things are the same as before the disaster and always will be. The Navy won't change their way of doing things."**

**"I feel the 16" guns are too old and slow."**

**"They Navy is still not sure what the problem was. They haven't proven shit, but they know how to use a scapegoat."**

**IF GIVEN A CHOICE, WOULD YOU VOLUNTEER TO WORK IN A TURRET?**

**YES**

**"I would work in a turret to see if I can speculate on how the accident occurred."**

**"I would work in a turret, I feel safe with my CO. I do what I am told and work hard."**

**"I believe it was a it was a freak accident. One can't dwell on the possibilities of a future like occurrence."**

**NO**

**"I won't work in a turret until they prove the turrets and the powder are safe."**

**"Turrets are behind the times."**

**"I won't work in a turret. It puts too much mental strain on my parents, my loved ones, and myself."**

**"Mentally I would be too nervous to perform adequately in a turret."**

**"I do not want to shoot the 16" guns."**

**"I believe turrets are unsafe."**

"No way in hell will I work in a turret. Turrets are too loud and dangerous."

"I believe an explosion could happen to us on the Wisconsin."

"I won't work in a turret because I hate closed-in space."

"I don't think anybody who works in a turret feels safe."

"I have no interest in working in a turret."

"I won't work in a turret because I don't want to be reminded of the disaster."

"Not until I was completely satisfied that safety regulations aren't being compromised and any and all doubts have been put to rest would I work in a turret."

**IF GIVEN A CHOICE WOULD YOU WORK ON A BATTLESHIP AGAIN?**

**YES**

"I would work on a battleship, but not in a turret."

"Battleships are the most protected ships in the fleet."

"I am a battleship sailor. I have a lot of pride in that."

"Battleships are awesome! They are also widely respected. I like the atmosphere on battleships."

"I would work on a battleship because its good to be on a good piece of history."

"I love the battleship. It is the ultimate war ship and keeper of the peace, as far as I am concerned. I am proud of the battleships."

"It is a great honor to serve your country on one of the world's most powerful ships. I like the thought of serving on the same ship as thousands did during WWII."

**NO**

"I do not want to work on a battleship because the people on board are worked like dogs with very little reward. Many times I feel we are shielded from the truth."

"I do not like battleships."

"Battleships are a political platform and the crew of a battleship works under high stress conditions, therefore I wouldn't choose to work on a battleship."

"Battleships are too much of a show boat. They also pressure the crew for perfection when it is already there."

"Battleships are outdated."

**"I don't like the Navy because they don't put human life first."**

**"Battleships are a waste of money."**

**"Battleships are a thing of the past. It's an honor to have served on one, but I would not want to fight on one. I would feel more afraid of being on the ship than I would be of the enemy."**

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## BIBLIOGRAPHY

- Bartone P. T., Ursano R. J., Wright K. M., & Ingraham L. H. (1989). The impact of a military air disaster on the health of assistance workers: a prospective study. *The Journal of Nervous and Mental Disease*, 177(6), 317-328.
- Baum A. (1987). Toxins, technology, and natural disasters. In *Cataclysms, Crises, and Catastrophes: Psychology in Action* (pp 5-54). Washington, D.C.: American Psychological Association.
- Baum A., Solomon S. D., and Ursano R. J. (in press). Emergency/disaster studies: practical, conceptual, and methodological issues, in *The International Handbook of Traumatic Stress Syndromes*. J. P. Wilson and B. Raphael (Eds.). New York Plenum Press, Inc.
- Behar D. (1984). Confirmation of concurrent illness in posttraumatic stress disorder. *American Journal of Psychiatry*, 141, 1310-1311.
- Belenky G. L., Tyner C. F., Sodot F. J. (1983). *Israeli battle shock casualties: 1983 and 1982* (Report WRAIR-NP-83-4). Washington, DC: Walter Reed Army Institute of Research.
- Card J. J. (1983). *Lives After Viet Nam*. Lexington, MA: Lexington Books.
- Chisholm R. R., Kasl S. V., Mueller L. (1986). The effects of social support on nuclear worker responses to the Three Mile Island accident. *Journal of Occupational Behavior*, 7, 179-193.
- Cowan M. L., & Cloutier M. C. (1988). Medical simulation for disaster casualty management training. *Journal of Trauma*, 28(1 suppl), S178-182.
- Davidson J., Swartz M., Storck M., Krishnan R. R., Hammett E. (1985). A diagnostic and family study of posttraumatic stress disorder. *American Journal of Psychiatry*, 142, 90-93.
- Egendorf A., Kadushin C., Laufer R., et al (1981). *Legacies of Vietnam: Comparative Adjustment of Veterans and Their Peers* (pp 45-78). Washington, DC: U.S. Government Printing Office.
- Erikson K. T. (1976). *Everything in Its Path: Destruction of Community in the Buffalo Creek Flood*. New York, New York: Simon and Schuster.
- Escobar J. I., Randolph E. T., Puente G., Spiwak F., Asamen J. K., Hill M., Hough R. L. (1983). Post-traumatic stress disorder in Hispanic Vietnam veterans: clinical phenomenology and sociocultural characteristics. *Journal of Nervous and Mental Disease*, 171, 585-596.
- Fain R. M., & Schreier R. A. (1989). Disaster, stress and the doctor. *Medical Education*, 23, 91-96.
- Frye J. S., Stockton R. A. (1982). Discriminant analysis of posttraumatic stress disorder among a group of Vietnam veterans. *American Journal of Psychiatry*, 149, 52-56.

- Feldstein B. D., Gallery M. E., Sanner P. H., & Page J. R. (1985). Disaster training for emergency physicians in the United States: a systems approach. *Annals of Emergency Medicine*, 14, 36-40.
- Fullerton C.S., McCarroll J. E., Ursano R. J., Wright K.: Psychological responses of rescue workers: fire fighters and traum. *American Journal of Orthopsychiatry* (in press).
- Glass A. (1957). *Observations upon the epidemiology of mental illness in troops during warfare*. Symposium on preventive and social psychiatry, Walter Reed Army Institute of Research, Walter Reed Army Medical Center and the National Research Council. Washington, DC: U.S. Government Printing Office. (The Symposium took place April 15-17, 1957, and this paper was presented on April 15, 1957.)
- Green B. L. (1991). Evaluating the effects of disasters. *Psychological Assessment: A Journal of Consulting and Clinical Psychology*, 3(4), 538-546.
- Green B. L., Grace M. C., Gleser G. C. (1985). Identifying survivors at risk: Long-term impairment following the Beverly Hills Supper Club fire, *Journal of Consulting and Clinical Psychology*, 53, 672-678.
- Holloway H. C., Ursano R. J. (1984). The Vietnam veteran: metaphor, social context and metaphor. *Psychiatry*, 47, 103-108.
- Iacobell F. P., & Schodowski L. (1980). Fire reaction training that really works. *Hospitals*, 54(3), 64-66.
- Kettner B. (1972). Combat strain and subsequent mental health. *Acta Psychiatrica Scandinavica Supplementum*, 230, 5-107.
- Laufer R. S. (1985). War trauma and human development: the Viet Nam experience. In J. Sonnenberg, A. S. Blank Jr., J. Talbott (Eds), *Stress and Recovery in Viet Nam Veterans*. Washington, DC: American Psychiatric Press.
- Lifton R. J., & Olsen E. (1976) The human meaning of total disaster, the Buffalo Creek experience. *Psychiatry*, 39, 1-18.
- Lima B. R., Chavez H., Samaniego N., Pompei M. S., Pai S., Santacruz H., & Lozano J. (1989). Disaster severity and emotional disturbance: implications for primary mental health care in developing countries. *Acta Psychiatry Scandinavia*, 79, 74-82.
- Lystad M. (1986). *Disasters and Mental Health: Innovations in Services to Disaster Victims* (pp 229-257). Washington, D.C.: American Psychiatric Press, Inc.
- McCarroll J. E., Ursano R. J., Fullerton C. S., Wright K. M.: Community consultation following a major air disaster. *Journal of Community Psychology* (in press).
- Otten E. J., & Zink B. J. (1989). A four-year program to train residents in emergency medical services. *Academic Medicine*, 64(5), 275-276.

- Rundell J. R., Ursano R. J., Holloway H. C., & Siberman E. K. (1989). Psychiatric responses to trauma. *Hospital and Community Psychiatry*, 40, 68-74.
- Sanner P. H., & Wolcott B. W. (1983). Stress reactions among participants in mass casualty simulations. *Annals of Emergency Medicine*, 12(7), 426-428.
- Shalev A., Bleich A., & Ursano R. J. (in press). Post-traumatic stress disorder: somatic comorbidity and effort tolerance. *Psychosomatics*.
- Shore J. H., Tatum E. L., Vollmer W. M. (1986). Psychiatric reactions to disaster: the Mount St. Helen's experience. *American Journal of Psychiatry*, 143, 590-595.
- Sierles F. S., Chen J. J., McFarland R. E., Taylor M. A. (1983). Posttraumatic stress disorder and concurrent psychiatric illness: A preliminary report. *American Journal of Psychiatry*, 140, 1177-1179.
- Singer T. J. (1982). An introduction to disaster: some considerations of a psychological nature. *Aviation, Space, and Environmental Medicine*, 53(3), 245-250.
- Sledge W. H., Boydston J. A., Rahe A. J. (1980). Self-concept changes related to war captivity. *Archives of General Psychiatry*, 37, 430-443.
- Solomon S. D., Smith E. M., Robins L. N., and Fischbach R. L. (1987). Social involvement as a mediator of disaster - induced stress. *Journal of Applied Social Psychology*, 17(12), 1092-1112.
- Sowder B. J. (1986). *Disasters and Mental Health: Contemporary Perspectives* (pp 3-228). Washington, D.C.: American Psychiatric Press, Inc.
- Spitz R. (1965). *The First Year of Life -- Normal and Deviant Object Relations*. New York: International Universities Press.
- Stretch R. H., Vail J. D., Maloney J. P. (1985). Posttraumatic stress disorder among Army Nurse Corps Vietnam veterans. *Journal of Consulting and Clinical Psychology*, 53, 704-708.
- Teirney K. J., Baisden B. (1979). *Crisis intervention programs for disaster victims: a source book and manual for small communities*. DHEW Publication No. (ADM) 79-675. Washington, DC: U.S. Government Printing Office.
- Ursano R. J. (1987). Comments on "Post-traumatic stress disorder : the stressor criterion" (invited commentary). *Journal of Nervous and Mental Disease*, 75, 273-275.
- Ursano R. J. and Fullerton C. S. (Ed.). (1988). *Exposure to Death, Disasters, and Bodies* (DTIC: A203163). Bethesda, MD: Uniformed Services University of Health Sciences.
- Ursano R. J. and Fullerton C. S. (Ed.). (1988). *Groups and Organizations in War, Disasters, and Trauma* (DTIC: A203161:). Bethesda, MD: Uniformed Services University of the Health Sciences.



- Ursano R. J. and Fullerton C. S. (Ed.). (1988). *Individual and Group Behavior in Toxic and Contained Environments* (DTIC: A203267). Bethesda, MD: Uniformed Services University of the Health Sciences.
- Ursano R. J. and Fullerton C. S. (Ed.). (1988). *Individual Responses to Disaster* (DTIC: A203310). Bethesda, MD: Uniformed Services University of the Health Sciences.
- Ursano R. J. and Fullerton C. S. (Ed.). (1988). *Performance and Operations in Toxic Environment* (DTIC: A203162). Bethesda, MD: Uniformed Services University of the Health Sciences.
- Ursano R. J. and Fullerton C. S. (Ed.). (1988). *Training for the Psychological and Behavioral Effects of the CBW Environment* (DTIC: A203680). Bethesda, MD: Uniformed Services University of the Health Sciences.
- Ursano R. J. and Fullerton C. S. (Ed.). (1988). *Psychological and Behavioral Responses to a chemical and Biological Warfare Environment: Final Recommendations* (DTIC: A203679). Bethesda, MD: Uniformed Services University of the Health Sciences.
- Ursano R. J. (1981). The Vietnam era prisoner of war: Precaptivity personality and the development of psychiatric illness. *American Journal of Psychiatry*, 138, 315-318.
- Ursano R. J., Boydstun J. A., Wheatley R. D. (1981). Psychiatric illness in U.S. Air Force Vietnam prisoners of war: a five-year follow-up. *American Journal of Psychiatry*, 138, 310-314.
- Ursano R. J., Fullerton C. S. (in press). Cognitive and behavioral responses to trauma. *Journal of Applied Social Psychology* 20(21): 1766-1775, 1990.
- Ursano R. J., and McCarroll J. E. (in press). The nature of a traumatic stressor: handling dead bodies. *The Journal of Nervous and Mental Disease*.
- Ursano R. J., McCaughey, B., and Fullerton, C. S. (Eds.): *The Structure of Human Chaos: Individual and Community Responses to Trauma and Disaster*. Cambridge University Press, London (in preparation).
- Williams C. L., Solomon S. D., and Bartone P. (1988). Primary prevention in aircraft disasters. *American Psychologist*, 43(9), 730-739.
- Wright K., Ursano R. J., Bartone P., and Ingraham L. (1990). Individual and community responses to disaster: victim classification. *Journal of Orthopsychiatry*, 60, 35-42.
- Wright K., Ursano R. J., Bartone P., & Ingraham L. (1988). *Community responses to disaster: victim classification* (Presented at the 141st Annual Meeting of American Psychiatric Association, May, 1988, Montreal, Canada).
- Wright K. (Ed.). (1987). *The human response to the Gander military air disaster: A summary report* (Report WRAIR-NP-88-12). Washington, DC: Walter Reed Army Institute of Research.

Yager T., Laufer R., Gallops M. (1984). Some problems associated with war experience in men of the Vietnam generation. *Archives of General Psychiatry*, 41, 327-333.